

IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF PENNSYLVANIA

JILL STEIN, ET AL  
PLAINTIFFS

: CIVIL CASE NUMBER

VERSUS

: 16-6287

PEDRO A. CORTES, ET AL,  
DEFENDANTS

:  
:  
:

ORIGINAL

FEBRUARY 19, 2020  
COURTROOM 14A  
PHILADELPHIA, PA 19106

BEFORE THE HONORABLE PAUL S. DIAMOND, J.

EVIDENTIARY HEARING - DAY 2

APPEARANCES:

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FILED  
MAR 02 2020  
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Dep. Clerk

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OFFICIAL COURT REPORTER  
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PROCEEDINGS RECORDED BY STENOGRAPHY-COMPUTER,  
TRANSCRIPT PRODUCED BY COMPUTER-AIDED TRANSCRIPTION

JG

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22

23

24

25

1 (CLERK OPENS COURT.)

2 THE COURT: PLEASE BE SEATED EVERYBODY.

3 GOOD MORNING.

4 ALL COUNSEL: GOOD MORNING, YOUR HONOR.

5 THE COURT: HOW WOULD THE PARTIES LIKE TO  
6 PROCEED?

7 MR. MAAZEL: WE ARE READY TO PROCEED THIS  
8 MORNING FIRST WITH DR. HALDERMAN.

9 THE COURT: OKAY, THAT'S FINE.

10 (WITNESS SWORN.)

11 THE WITNESS: MY NAME IS J. ALEX,  
12 A-L-E-X, HALDERMAN, H-A-L-D-E-R-M-A-N.

13 THE COURT: WELCOME BACK, DOCTOR.

14 THE WITNESS: THANK YOU, YOUR HONOR.

15 DIRECT EXAMINATION

16 BY MR. MAAZEL:

17 Q. GOOD MORNING, DR. HALDERMAN.

18 A. GOOD MORNING.

19 Q. WHAT IS YOUR ROLE IN THIS CASE VIS-A-VIS THE  
20 SELLER AGREEMENT?

21 A. I AM THE STEIN PLAINTIFFS' DESIGNEE FOR PURPOSES  
22 OF OBSERVING PENNSYLVANIA'S CERTIFICATION TESTING.

23 Q. SO, WE KNOW THAT YOU HAVE APPEARED BEFORE JUDGE  
24 DIAMOND IN THIS CASE BEFORE, BUT BRIEFLY, WHAT ARE YOUR  
25 EDUCATIONAL AND PROFESSIONAL BACKGROUND?

1 A. I AM A PROFESSOR OF COMPUTER SCIENCE AND  
2 ENGINEERING AT THE UNIVERSITY OF MICHIGAN. AND I HOLD A  
3 PH.D. IN COMPUTER SCIENCE FROM PRINCETON. AND MY  
4 RESEARCH IS ABOUT COMPUTER SECURITY WITH AN EMPHASIS ON  
5 THE SECURITY OF ELECTIONS.

6 Q. ALL RIGHT. AND DO YOU HAVE ANY ROLE TODAY  
7 VIS-A-VIS ELECTION SECURITY IN THE UNITED STATES?

8 A. YES. I'VE -- SINCE 2016, I HAVE TESTIFIED TWICE  
9 BEFORE CONGRESS ON THE SUBJECT OF ELECTION SECURITY AND  
10 I AM CURRENTLY SERVING AS THE CO-CHAIR OF THE STATE OF  
11 MICHIGAN'S ELECTION SECURITY ADVISORY COMMISSION.

12 Q. WHO APPOINTED YOU TO THE SECURITY ADVISORY  
13 COMMISSION?

14 A. MICHIGAN'S SECRETARY OF STATE, JOCELYN BENSON.

15 Q. THE KATHY BOOCKVAR OF MICHIGAN?

16 A. I SUPPOSE YOU COULD SAY SO.

17 Q. HAVE YOU EVER BEEN ADMITTED IN COURT AS AN  
18 EXPERT IN ELECTION SECURITY?

19 A. YES, I HAVE.

20 MR. MAAZEL: TO THE EXTENT IT IS  
21 NECESSARY, YOUR HONOR, WE WOULD JUST ASK THAT DR.

22 HALDERMAN BE DESIGNATED AS AN EXPERT --

23 THE COURT: HIS DESIGNATION FROM THE 2016  
24 HEARING IS STILL -- IT'S THE SAME CASE, BUT I WILL  
25 REDESIGNATE HIM, UNLESS THE DEFENDANT HAS AN OBJECTION.

1 MR. WIYGUL: NO OBJECTION, YOUR HONOR.

2 THE COURT: VERY WELL.

3 BY MR. MAAZEL:

4 Q. DR. HALDERMAN, CAN WE TURN TO JX 30, WHICH I  
5 THINK EVERYBODY IN THE COURT BY NOW KNOWS IS THE  
6 SETTLEMENT AGREEMENT IN THIS CASE, AND TO PAGE TWO.

7 AND DO YOU SEE THE SECTION IN 2A, THE  
8 REQUIREMENT THAT THE BALLOT ON WHICH EACH VOTE IS  
9 RECORDED IS PAPER?

10 A. YES, I DO.

11 Q. CAN YOU READ THE FOOTNOTE ATTACHED TO THAT  
12 PARAGRAPH?

13 A. THE FOOTNOTE SAYS, A VVPAT RECEIPT GENERATED BY  
14 A DRE MACHINE IS NOT A PAPER BALLOT.

15 Q. IS YOUR UNDERSTANDING THAT THE VVPATS ARE  
16 PROHIBITED BY THE SELLING AGREEMENT?

17 A. YES, IT IS.

18 Q. AND WERE YOU HERE YESTERDAY FOR MR. GATES'  
19 TESTIMONY WHERE HE SAID THAT DRE'S WITH VVPATS ARE A  
20 LEMON?

21 A. YES.

22 Q. AND THAT ALL PARTIES UNDERSTOOD THAT IS NOT  
23 PERMITTED BY THE SETTLEMENT AGREEMENT?

24 A. I WAS HERE FOR THAT.

25 Q. I WANT TO FOCUS ON THE EXPRESSVOTE XL.

1 ARE YOU NOW -- DO YOU HAVE SOME  
2 FAMILIARITY WITH THAT SYSTEM TODAY?

3 A. YES.

4 Q. AND CAN YOU TELL US FIRST, WHAT IS A DRE WITH A  
5 VVPAT?

6 A. SO A DRE, A DIRECT RECORDING ELECTRONIC VOTING  
7 MACHINE WITH A VVPAT, A VOTER-VERIFIABLE PAPER AUDIT  
8 TRAIL, IS A KIND OF VOTING MACHINE WHERE THE SAME SYSTEM  
9 PHYSICALLY, LOGICALLY IS RESPONSIBLE FOR THE VOTER  
10 CASTING THE VOTE, IS RESPONSIBLE FOR RECORDING THE VOTE,  
11 AND IS RESPONSIBLE FOR TABULATING THE VOTES.

12 Q. OKAY. AND SO LOOKING AT THE EXPRESSVOTE XL, HOW  
13 WOULD YOU DESCRIBE WHAT THAT SYSTEM IS VIS-A-VIS THE  
14 CONCEPT OF A DRE WITH A VVPAT?

15 A. WELL, KNOWING EVERYTHING I KNOW NOW, I WOULD SAY  
16 THAT THE EXPRESSVOTE XL IS ABSOLUTELY A DRE WITH A  
17 VVPAT.

18 Q. WHY DO YOU THINK THAT?

19 A. WELL, SO UNLIKE EVERY OTHER VOTING MACHINE THAT  
20 IS CERTIFIED IN PENNSYLVANIA, THE EXPRESSVOTE XL HAS A  
21 NUMBER OF CHARACTERISTICS THAT ARE JUST LIKE EVERY OTHER  
22 DRE WITH VVPAT. IT'S A SINGLE MACHINE THAT IS BOTH WHAT  
23 THE VOTER IS INTERACTING WITH ON A TOUCHSCREEN TO CAST  
24 THE VOTE, AND WHAT IS COUNTING THE VOTE. IT OUTPUTS AN  
25 ELECTRONIC RECORD OF THE VOTE THAT IS THE RESULT OF THE

1 ELECTION.

2 THE MACHINE, IN ADDITION TO THAT, DOES  
3 NOT SPIT OUT A BALLOT THAT THE VOTER CAN TAKE AND PUT  
4 INTO A SEPARATE SYSTEM TO BE COUNTED, THE BALLOT IS  
5 CAPTIVE BEHIND THE PANE OF GLASS, WHICH CAUSES ALL SORTS  
6 OF ACCESSIBILITY PROBLEMS. THE VOTER NEVER HAS A CHANCE  
7 TO --

8 THE COURT: I'M SORRY. HE ASKED YOU HOW  
9 IT WAS A DRE. YOU ARE GIVING US A GENERAL REVIEW OF THE  
10 MACHINE. A DRE, REMEMBERING YOUR TESTIMONY FROM THREE  
11 YEARS AGO OR TWO-AND-A-HALF YEARS AGO, AND THE TESTIMONY  
12 AT THIS HEARING, A DRE HAS NO PAPER RECORD AT ALL, ISN'T  
13 THAT RIGHT?

14 THE WITNESS: SO --

15 THE COURT: IS THAT A YES OR A NO?

16 THE WITNESS: NO.

17 THE COURT: IT DOESN'T HAVE A PAPER  
18 RECORD OR IT DOES?

19 THE WITNESS: YOUR HONOR, SOME DRE'S ARE  
20 COMPLETELY PAPERLESS, AND THAT WAS PART OF THE SUBJECT  
21 FROM THREE YEARS AGO. OTHERS HAVE WHAT IS CALLED A  
22 VVPAT, WHICH IS --

23 THE COURT: FORGET ABOUT THE VVPAT,  
24 FORGET ABOUT THE VVPAT. DOES A DRE WITHOUT A VVPAT HAVE  
25 A PAPER RECORD?

1 THE WITNESS: A DRE WITHOUT A VVPAT DOES  
2 NOT.

3 THE COURT: THANK YOU.

4 BY MR. MAAZEL:

5 Q. AND MY QUESTION TO YOU, DR. HALDERMAN, IS HOW IS  
6 A DRE WITH A VVPAT SIMILAR OR THE SAME AS THIS SYSTEM?

7 A. SO I WAS DESCRIBING HOW THEY WERE FUNCTIONALLY  
8 ONE AND THE SAME. SO THE SAME MACHINE IS BEING USED TO  
9 CAST AND COUNT THE VOTE. THE PAPER RECORD IS NOT  
10 SOMETHING THAT COMES OUT OF THE MACHINE, IT IS RETAINED  
11 WITHIN THE MACHINE. THE PAPER RECORD -- THE CONTENTS OF  
12 THE PAPER RECORD ARE DETERMINED BY THE MACHINE BEFORE  
13 THE VOTER EVEN HAS A CHANCE TO SEE IT. THE PAPER  
14 RECORDS ARE RETAINED IN ORDER. AND IN THE CASE OF THE  
15 XL, THE PAPER RECORD IS NOT A BALLOT IN THE TRADITIONAL  
16 SENSE, IT IS A SUMMARY WHERE THE THING THAT THE MACHINE  
17 IS ACTUALLY COUNTING IS NOT SOMETHING THAT THE VOTER CAN  
18 SEE AND READ AT ALL, IT'S THE BARCODE.

19 BY THE COURT:

20 Q. THE DRE WITH A VVPAT, WHAT IS THE MACHINE  
21 READING? IS IT READING THE RECEIPT?

22 A. SO --

23 Q. YES OR NO QUESTION, IS IT READING THE RECEIPT?

24 A. OTHER DRE'S WITH VVPAT USUALLY ARE NOT READING  
25 THE RECEIPT.



1 Q. THEN HOW CAN YOU SAY THEY ARE THE SAME THING?

2 A. WELL, SO THE QUESTION IS HOW IS THE MACHINE  
3 RECORDING THE VOTE. SO DIRECT RECORDING. DIRECT  
4 RECORDING IS A CONCEPT THAT PREDATES ALL OF THESE  
5 ELECTRONIC SYSTEMS. IT COMES FROM LEVER MACHINES, YOUR  
6 HONOR.

7 Q. I REMEMBER THEM.

8 A. RIGHT. THE TERM WAS INTRODUCED TO DISTINGUISH  
9 LEVER MACHINES FROM SYSTEMS THAT INVOLVED A VOTER  
10 MARKING A BALLOT IN A SEPARATE MACHINE THAT WAS  
11 RECORDING THE BALLOT.

12 IN THIS MACHINE, THERE IS -- IT'S BEEN  
13 ENGINEERED IN SUCH A WAY THAT A BALLOT IS PRINTED, A  
14 BALLOT IS SCANNED INVISIBLY TO THE VOTER; AT LEAST  
15 THAT'S HOW THE MACHINE IS SUPPOSED TO WORK IF IT'S NOT  
16 HACKED, THAT IT IS PRINTING IT AND THEN SCANNING IT.

17 Q. WHAT MACHINE ARE WE TALKING ABOUT?

18 A. EXCUSE ME, THE XL, AND I AM TALKING ABOUT THE  
19 XL'S SUMMARY CARD AS BEING PRINTED AND THEN IS BEING  
20 SCANNED OUT OF VIEW OF THE VOTER BEFORE THE VOTER EVEN  
21 SEES IT. BUT THAT'S AN ENGINEERING DETAIL THAT IS  
22 FUNCTIONALLY IRRELEVANT TO THE SECURITY OF THE MACHINE,  
23 TO THE VOTER'S EXPERIENCE OF THE MACHINE. IT'S A --

24 Q. AS I UNDERSTAND THE SUBJECT MACHINE, THE VOTE IS  
25 READ FROM A BARCODE THAT IS PRINTED ON -- CALL IT

1 ANYTHING BUT LATE FOR DINNER -- THE BALLOT, THE PAPER  
2 RECORD, THE PAPER TRAIL, ISN'T THAT RIGHT? IT READS THE  
3 BARCODE ON WHAT I WILL CALL THE BALLOT, CORRECT?

4 A. IF THE MACHINE IS WORKING THE WAY IT'S INTENDED  
5 TO WORK --

6 Q. PLEASE, WE WILL GET INTO YOUR MANY HYPOTHETICALS  
7 LATER. IF THE MACHINE IS -- THE SUBJECT MACHINE HERE,  
8 ARE YOU WITH ME SO FAR?

9 A. YES, YOUR HONOR.

10 Q. THE MACHINE PRINTS OUT A BALLOT, THE MACHINE  
11 READS THE BARCODE ON THE BALLOT, AND THAT'S HOW THE VOTE  
12 IS RECORDED, OFF THE BARCODE, CORRECT?

13 A. IF IT'S FUNCTIONING THE WAY IT'S INTENDED, YOU  
14 ARE RIGHT, YOUR HONOR.

15 Q. THANK YOU FOR THAT.

16 ----- A DRE, WHICH I ALSO REMEMBER, THE VOTER -----  
17 PRESSES A BUTTON AND IT'S ELECTRONICALLY RECORDED,  
18 PERIOD, CORRECT? EVEN WITH A PAPER RECEIPT, CORRECT?

19 A. THAT'S CORRECT.

20 Q. ISN'T THAT NIGHT AND DAY?

21 A. I -- RESPECTFULLY, I DISAGREE, YOUR HONOR.

22 BY MR. MAAZEL:

23 Q. CAN YOU EXPLAIN, DR. HALDERMAN, WHY YOU  
24 DISAGREE?

25 A. WELL, I DISAGREE BECAUSE THE FACT THAT THE

1 MACHINE INTERNALLY IS DESIGNED TO PRINT A CODE THAT NO  
2 ONE OTHER THAN THE MACHINE IS INTERPRETING. AND THEN TO  
3 SCAN THAT SAME CODE, THAT'S AN ENGINEERING GLITCH. THAT  
4 HAS NO RELEVANCE TO THE SECURITY OF THE SYSTEM TO THE  
5 VOTER'S EXPERIENCE TO THE FACT THAT THESE --  
6 BY THE COURT:

7 Q. NOT AT ALL? NO RELEVANCE AT ALL TO THE VOTER'S  
8 EXPERIENCE? IF I HIT A BUTTON, AND WE HAD TESTIMONY TO  
9 THIS EFFECT, OR AT LEAST EVIDENCE TO THIS EFFECT  
10 TWO-AND-A-HALF YEARS AGO. IN A DRE MACHINE, IF I HIT A  
11 BUTTON, IT MAY RECORD MY VOTE CORRECTLY, IT MAY NOT; I  
12 HAVE NO INDICATION AT ALL WHETHER IT DOES. NOW, PLEASE,  
13 DON'T SAY IF IT'S FUNCTIONING PROPERLY.

14 THE XL MACHINE TELLS YOU WHAT THE BARCODE  
15 SAYS, CORRECT? IT SAYS HERE ARE YOUR CHOICES. ISN'T  
16 THAT RATHER -- AND IF THE VOTER SAYS NO, THAT'S NOT MY  
17 CHOICE OR IF THE VOTER CHANGES HER MIND, THE VOTE DOES  
18 NOT GET RECORDED AND SHE GETS TO CAST IT AGAIN, ISN'T  
19 THAT CORRECT?

20 A. RESPECTFULLY, YOUR HONOR, THE VVPAT WORKS THE  
21 SAME WAY.

22 Q. YES. DOES IT RECORD THE RECEIPT, IS THAT THE  
23 VOTE, OR IS THE VOTE ELECTRONICALLY RECORDED?

24 A. IN BOTH CASES, THE VOTE IS ELECTRONICALLY  
25 RECORDED, AND THERE IS A PAPER RECEIPT.

1 Q. I'M SORRY. HOW DOES ONE DO A RECOUNT OF A DRE  
2 WITH OR WITHOUT A VVPAT?

3 A. A DRE WITH A VVPAT CAN BE RECOUNTED BY --

4 Q. I DIDN'T SAY HOW IT CAN BE. A DRE RECOUNT -- IF  
5 I AM USING THE WRONG TERMINOLOGY, PLEASE TELL ME. BUT  
6 THE MEMORY OF THE MACHINE IS IN ONE WAY OR ANOTHER  
7 SCANNED, CORRECT?

8 A. THE MEMORY CAN BE SCANNED WITH EITHER OF THESE  
9 DEVICES OR THE PAPER RECEIPTS CAN BE REVIEWED.

10 Q. THEY CAN BE REVIEWED, BUT THAT'S NOT HOW A  
11 RECOUNT IS DONE WITH A DRE.

12 A. IN SOME STATES THAT IS HOW --

13 Q. IN PENNSYLVANIA?

14 A. I DON'T KNOW WHAT PENNSYLVANIA'S DRE RECOUNT  
15 PRACTICE IS, OR WERE, I'M SORRY, YOUR HONOR.

16 BY MR. MAAZEL:

17 Q. DR. HALDERMAN, YOU MENTIONED THAT THIS  
18 PARTICULAR MACHINE DETERMINES ELECTRONIC RECORD EVEN  
19 BEFORE THE VOTER SEES THE PAPER THROUGH THE GLASS. CAN  
20 YOU EXPLAIN THAT?

21 A. THAT'S RIGHT. SO THE WAY THAT THE XL IS  
22 DESIGNED, IT PRINTS THE BARCODES AND TEXT OF THE SUMMARY  
23 CARD AND THEN SCANS THEM AND THEN DISPLAYS THE SUMMARY  
24 CARD BEHIND THE GLASS FOR THE VOTER.

25 Q. IS THAT -- ARE YOU AWARE OF OTHER VALID

1 BALLOT-MARKING DEVICES THAT DO THAT?

2 A. NO, I AM NOT.

3 Q. AND WHEN DID YOU LEARN THAT THIS PARTICULAR  
4 DEVICE DETERMINES THE ELECTRONIC RECORD OF A VOTE BEFORE  
5 THE VOTER EVEN SEES THE PAPER THROUGH THE GLASS?

6 A. SO I LEARNED THAT FROM THE RESULTS OF  
7 PENNSYLVANIA'S REEXAMINATION, I BELIEVE IN SEPTEMBER OF  
8 LAST YEAR.

9 Q. NOW, I BELIEVE, AND CORRECT ME IF I AM WRONG,  
10 BUT I BELIEVE YOU ALSO TESTIFIED AS -- OR MAYBE YOU  
11 DIDN'T. DID YOU TESTIFY AS TO THE LOCATION OF THE  
12 PRINthead VIS-A-VIS THE VOTER LOOKING AT THE PIECE OF  
13 PAPER THROUGH THE GLASS?

14 A. DID I TESTIFY? YES, IN MY DECLARATION.

15 Q. OKAY. LET ME ASK YOU THIS QUESTION: THE  
16 SETTLEMENT AGREEMENT IN SECTION 2C PROVIDES THAT THE  
17 MACHINE MUST BE CAPABLE OF SUPPORTING THE ROBUST  
18 PRECERTIFICATION AUDITING PROCESS.

19 A. YES.

20 Q. AND CAN YOU TELL US YOUR VIEW AS TO WHETHER THIS  
21 PARTICULAR SYSTEM, THE XL SYSTEM, IS CAPABLE OF  
22 SUPPORTING A ROBUST PRECERTIFICATION AUDITING PROCESS?

23 A. I DO NOT BELIEVE THAT IT IS CAPABLE OF  
24 SUPPORTING A ROBUST PRECERTIFICATION AUDITING PROCESS.  
25 AND THE REASON FOR THAT IS BECAUSE OF THE DESIGN OF THE

1 MACHINE, IT'S FLAWED IN THE SENSE THAT THE PRINthead,  
2 THIS MECHANISM, IS CONTROLLED BY SOFTWARE RUNNING THE  
3 MACHINE. AND IF THAT SOFTWARE IS COMPROMISED, IT WOULD  
4 BE POSSIBLE FOR THE MACHINE TO PRINT ON THE BALLOT AGAIN  
5 AFTER THE VOTER HAS SEEN IT. YOU COMPROMISE THE PAPER  
6 -- EXCUSE ME, IT'S NOT A BALLOT, THE XL EVEN, IT'S A  
7 SUMMARY CARD. AND IF YOU COMPROMISE THE CONTENTS OF THE  
8 SUMMARY CARDS THEN THAT PAPER TRAIL IS NOT GOING TO HAVE  
9 INTEGRITY DURING AN AUDIT. IF IT HAS BEEN CHANGED, ALL  
10 OF THE RECORDS OF THE VOTE CAN BE CHANGED.

11 Q. SO JUST SO I UNDERSTAND, AFTER THE VOTER SEES  
12 THE PIECE OF PAPER THROUGH THE GLASS --

13 A. YES.

14 Q. -- THEY -- WHAT DO THEY DO, DO THEY PRESS A  
15 BUTTON SAYING THIS IS MY VOTE OR WHAT DO THEY DO?

16 A. THEY PRESS A BUTTON TO CAST THE VOTE, AND THE  
17 SUMMARY CARD IS PULLED BACK THROUGH THE MACHINE, PAST  
18 THE LOCATION OF THE PRINthead AGAIN AND IS DEPOSITED  
19 INTO A CONTAINER.

20 Q. IS THAT TYPICAL OF BALLOT-MARKING DEVICES THAT  
21 AFTER A VOTER APPROVES THEIR VOTE, THE PIECE OF PAPER  
22 GOES THROUGH A PRINthead THAT CAN PRINT ON THAT PIECE OF  
23 PAPER?

24 A. NO, IT'S CERTAINLY NOT TYPICAL.

25 Q. I WOULD LIKE TO POINT OUT TO YOU --

1 BY THE COURT:

2 Q. THE OTHER KINDS OF DEVICES, THEY USE SOFTWARE AS  
3 WELL?

4 A. IN -- YES, YES, THEY DO.

5 Q. THE OTHER DEVICES THAT WERE CERTIFIED IN  
6 PENNSYLVANIA?

7 A. YES, YOUR HONOR.

8 Q. AND THEY COULD BE SUBJECT -- THAT SOFTWARE COULD  
9 BE SUBJECT TO TAMPERING AS WELL?

10 A. YES, THEY COULD.

11 THE COURT: OKAY.

12 BY MR. MAAZEL:

13 Q. AND THOSE OTHER DEVICES THAT PRODUCE A PIECE OF  
14 PAPER THAT YOU THEN HAVE IN YOUR HAND AND PUT INTO AN  
15 OPTISCAN, CAN THAT PIECE OF PAPER BE CORRUPTED?

16 A. NO, IT CAN'T. AND THAT'S THE ENTIRE REASON WHY  
17 A PAPER TRAIL AND POST-ELECTION AUDITS ARE SO IMPORTANT  
18 BECAUSE IN A TRADITIONAL BALLOT-MARKING DEVICE AND  
19 OPTICAL SCAN SYSTEM OR A HAND-MARKED OPTICAL SCAN  
20 SYSTEM, THERE IS NO OPPORTUNITY FOR A CYBER ATTACK TO  
21 LATER CHANGE THE CONTENTS OF THE BALLOT AFTER THE VOTER  
22 HAS SEEN IT.

23 BY THE COURT:

24 Q. HOW WOULD THE BALLOT LOOK IF IT PASSED THROUGH  
25 THE PRINthead AND -- AT SOME POINT I ASSUME SOMEONE IS

1 GOING TO ASK YOU HOW EASY AND HOW ACCESSIBLE THESE  
2 MACHINES ARE AND WHETHER IT IS REALISTIC, AS I SAID IN  
3 MY OPINION TWO-AND-A-HALF YEARS AGO, BORDERS ON THE  
4 IRRATIONAL TO THINK THERE CAN BE MONKEYING AROUND, BUT  
5 LET'S PUT THAT ASIDE FOR A MINUTE. WHAT WOULD THE  
6 BALLOT LOOK LIKE IF IT WAS PRINTED OVER?

7 A. SO IF THE BALLOT WAS PRINTED OVER, IT MIGHT NOT  
8 LOOK NOTICEABLY DIFFERENT FROM A BALLOT THAT HAD BEEN  
9 PRINTED ONLY ONCE. AND THE REASON FOR THAT IS THAT  
10 ALTHOUGH THE MANUFACTURER TALKS ABOUT HOW UNDER NORMAL  
11 OPERATION PERHAPS THERE IS NO SPACE TO PRINT SOMETHING  
12 OVER IT, IF THE MACHINE HAS BEEN COMPROMISED, IT CAN  
13 LEAVE SPACE THE FIRST TIME.

14 THE COURT: PLEASE TURN TO JOINT  
15 EXHIBIT 57 AND PUT IT UP ON THE SCREEN.

16 THE WITNESS: ME?

17 THE COURT: NOT YOU.

18 MR. WIYGUL, COULD YOU HAVE YOUR --

19 MR. WIYGUL: I THINK MS. FERRARI IS  
20 WORKING ON IT RIGHT NOW, YOUR HONOR.

21 BY THE COURT:

22 Q. ALL RIGHT. THANK YOU.

23 THAT'S WHAT AN XL BALLOT, I'LL CALL IT  
24 THAT, LOOKS LIKE, CORRECT?

25 A. THAT'S WHAT THE SUMMARY CARD LOOKS LIKE, THAT'S



1 CORRECT.

2 Q. THANK YOU FOR THE CORRECTION.

3 NOW, YOU ARE TELLING ME THAT COULD BE  
4 PRINTED OVER AND IT WOULDN'T BE OBVIOUS THAT IT WAS  
5 PRINTED OVER? WHERE IS THE SPACE?

6 A. SO THE WAY THAT THIS IS PRINTED THE FIRST TIME  
7 IS UNDER THE CONTROL OF THAT SAME SOFTWARE, YOUR HONOR,  
8 WHICH MEANS THAT IT COULD LEAVE OFF PORTIONS OF IT THE  
9 FIRST TIME. THE VOTER --

10 Q. I'M SORRY, WHERE IS THE MALWARE TAKING EFFECT,  
11 IN THE FIRST PRINTING OR WHEN IT PASSES OVER AGAIN? OR  
12 DO YOU THINK THEY ARE BOTH INFECTED WITH THIS MYSTERIOUS  
13 DISEASE?

14 A. THE MACHINE IS ONE PHYSICAL AND LOGICAL UNIT,  
15 YOUR HONOR. IF IT IS --

16 Q. IT IS LOGICAL. NOT ALL THE TESTIMONY I HEAR IS.  
17 WHERE IS THE SPACE? YOU SAID IT WOULDN'T  
18 BE OBVIOUS. TO ME, THERE IS NO ROOM FOR ANYTHING IN  
19 THERE. THE NAMES OF THE CANDIDATES THE VOTER HAS CAST  
20 ARE LISTED. THE BARCODE IS ALL GIBBERISH TO ME. BUT IF  
21 THIS WERE PRINTED OVER, I DON'T KNOW HOW ANYBODY COULD  
22 READ ANYTHING ON IT?

23 A. EXCUSE ME, YOUR HONOR, MAYBE I AM NOT BEING  
24 CLEAR.

25 Q. I THINK YOU ARE BEING CLEAR.

1       A.           IF THE MACHINE IS -- IF THE MACHINE HAS BEEN  
2       ATTACKED, THE ATTACKER CAN CHANGE IT SO THAT THE FIRST  
3       TIME IT'S PRINTED IT LEAVES MORE SPACE.  AND THEN WHEN  
4       IT GOES BACK, IT FILLS IT IN SO THAT THE BALLOT LOOKS  
5       JUST LIKE THIS.  THE VOTER IS NOT GOING TO NOTICE  
6       BECAUSE THE VOTER DOESN'T KNOW WHETHER THERE'S SUPPOSED  
7       TO BE SPACE OR NOT.  SOMETIMES THERE IS SPACE.

8       Q.           WITH THE PENNSYLVANIA COUNTIES, AND I GUESS  
9       THERE ARE THREE THAT HAVE USED THIS MACHINE IN THE MOST  
10      RECENT ELECTION, WHICH WOULD HAVE BEEN NOVEMBER OF LAST  
11      YEAR.  DO YOU KNOW WHETHER ANY OF THE AUDITS THAT HAVE  
12      BEEN DESCRIBED TO US IN THIS HEARING SHOWED ADDITIONAL  
13      SPACE?

14     A.           I DON'T KNOW, YOUR HONOR.

15     Q.           AND IF THERE WERE ADDITIONAL SPACE, THEN  
16     WOULDN'T YOU HAVE -- SAY FOR ATTORNEY GENERAL, WOULDN'T  
17     YOU HAVE ADDITIONAL SPACE?  IT SAYS, ATTORNEY GENERAL,  
18     REP MORGAN WEST, SENIOR.  DOES THE MACHINE HAVE  
19     WHITEOUT?  DOES IT WHITE IT OUT?  NO, OF COURSE NOT,  
20     CORRECT?

21     A.           NO, OF COURSE NOT.

22     Q.           WHAT DOES IT DO, DOES IT PRINT OVER IT?

23     A.           SO IF THE VOTER, FOR INSTANCE, HAD MADE NO  
24     SELECTION IN THAT RACE --

25     Q.           AH, WE ARE REFINING OUR ANSWER.  GO AHEAD.

1 A. SO WHAT I AM -- WHAT I WANT TO POINT OUT IS THAT  
2 ONE SCENARIO WHERE THIS IS POSSIBLE WOULD BE IN CASES  
3 WHERE THE VOTER HAS MADE --

4 Q. WHERE WE HAVE HERE, VOTED FOR REPRESENTATIVE  
5 MORGAN WEST, SR., PRESUMABLY THE VOTER VOTED FOR SOMEONE  
6 ON THE BALLOT. SO YOU REALLY CAN'T HAVE A HYPOTHETICAL  
7 WHERE THE VOTER ASKS TO LOOK AT HIS BALLOT AND HE OR SHE  
8 HAS CAST NO VOTE. SO LET'S ASSUME THE VOTER HAS VOTED  
9 FOR REPRESENTATIVE MORGAN WEST, SR., AND THERE IS ALL  
10 THE SPACE IN THE WORLD BETWEEN ATTORNEY GENERAL AND  
11 GOVERNOR. WHAT HAPPENS UNDER YOUR MALWARE SCENARIO,  
12 YOUR HACKED SCENARIO, WHAT HAPPENS WHEN IT PASSES OVER  
13 THE PRINthead AGAIN? WHAT HAPPENS TO REPRESENTATIVE  
14 MORGAN WEST, SR. TO PRINT, WHAT HAPPENS TO IT?

15 A. YOUR HONOR, THERE ARE ACTUALLY SEVERAL SCENARIOS  
16 POSSIBLE. AND EVEN UNDER YOUR HYPOTHETICAL, ONE  
17 SCENARIO IS THAT THE BARCODE IS WRONG, EVEN THOUGH THE  
18 NAME IS CORRECT. ANOTHER SCENARIO IS THAT THE NAME IS  
19 CORRECT AND THE MALWARE IS PROGRAMMED NOT TO CHEAT IF  
20 THE VOTER HAS MADE A SELECTION FOR THAT RACE. A LARGE  
21 FRACTION OF VOTERS LEAVE VOTES BLANK IN CERTAIN RACES.

22 Q. I AM SORRY, YOU HAVE LOST ME. YOU SAID IT COULD  
23 PASS OVER THE PRINthead AND THE PRINthead COULD ACTUALLY  
24 PRINT OUT A CANDIDATE OTHER THAN THE ONE THE VOTER VOTED  
25 FOR. THAT'S WHAT I HEARD YOU SAY.

1 IF IT DOES THAT, WHAT HAPPENS TO THE  
2 PRINT REPRESENTATIVE MORGAN WEST, SR.?

3 A. SO --

4 Q. WHAT HAPPENS TO IT?

5 A. YOUR HONOR, IN THE CASE WHERE THE MACHINE HAS  
6 PRINTED THE FIRST TIME, IT'S NOT GOING TO PRINT OVER IT.

7 Q. WHAT IS IT GOING TO DO? YOU JUST SAID IT WILL  
8 PRINT IT. THAT'S THE DANGER OF PASSING IT THROUGH THE  
9 PRINthead IS THAT IT CAN CHANGE THE VOTER'S VOTE. HOW  
10 DOES IT DO THAT? DOES IT CROSS OUT -- BECAUSE WE ARE  
11 GOING TO HAVE AN AUDIT AFTERWARDS AND SOMEONE IS GOING  
12 TO LOOK AT IT AND SEE REPRESENTATIVE MORGAN WEST, SR.  
13 AND WHAT ELSE, IS IT GOING TO BE CROSSED OUT? WHAT IS  
14 IT GOING TO BE? WE ARE TALKING ABOUT WHAT ACTUALLY  
15 HAPPENS, NOT SOME THEORETICAL POSSIBILITY. WHAT IS  
16 HAPPENING TO REPRESENTATIVE MORGAN WEST, SR.? IT'S  
17 STILL GOING TO BE THERE, ISN'T IT?

18 A. SO, YOUR HONOR, IF IT'S BEEN PRINTED THERE THE  
19 FIRST TIME, IT'S STILL GOING TO BE THERE.

20 Q. SO HOW ON EARTH DOES THE MACHINE RECORD A  
21 DIFFERENT VOTE OTHER THAN WHAT IS PRINTED? IT CHANGES  
22 THE BARCODE?

23 A. SO IT COULD CHANGE THE BARCODE.

24 Q. SO WHAT HAPPENS TO THE BARCODE UP TOP?

25 A. IT --

1 Q. DOES IT ERASE THOSE BARCODES UP TOP? ARE THERE  
2 GOING TO BE TWICE AS MANY BARCODES UP TOP?

3 A. YOUR HONOR, IF THE BARCODE UP TOP IS OMITTED BY  
4 THE MACHINE THE FIRST TIME IT PRINTS, ARE YOU GOING TO  
5 NOTICE -- EXCUSE ME, RESPECTFULLY, I DON'T THINK MOST  
6 VOTERS WILL NOTICE.

7 Q. WHETHER OR NOT THE BARCODE IS THERE?

8 A. WHETHER OR NOT THE BARCODE UP TOP IS THERE.

9 Q. SO THE MALWARE, THIS IS -- THIS MALWARE IS  
10 REALLY AN ACCOMPLISHED BIT OF MALWARE. IT DOES NOT  
11 SIMPLY CHANGE THE VOTE. FIRST IT OMITTS THE BARCODE, AND  
12 IT THEN CREATES EXTRA SPACE, ALTHOUGH I DON'T KNOW WHY  
13 IT WOULD NEED EXTRA SPACE IF THE CANDIDATE THAT IS BEING  
14 VOTED FOR DOESN'T NECESSARILY CHANGE IN YOUR TESTIMONY,  
15 BUT CREATES EXTRA SPACE. THE MALWARE WAITS, LURKS AND  
16 WAITS IN HIDING IN A DUCK BLIND, IF YOU WILL, FOR THE  
17 VOTER TO VOTE. IT THEN PRINTS THE BARCODE AND LEAVES --  
18 IF REPRESENTATIVE MORGAN WEST, SR. IS WHAT THE PERSON  
19 CAST HIS OR HER VOTE FOR AND HE AGREES TO IT, IT LEAVES  
20 IT THERE. AND THEN WHAT, IT PRINTS THE NAME OF ANOTHER  
21 CANDIDATE IN THE BLANK SPACE OR JUST DOES NOT DO  
22 ANYTHING AT ALL? WHICH IS IT?

23 A. I AM SORRY, I AM NOT SURE THAT I WAS ABLE TO  
24 FOLLOW YOUR SCENARIO IN ITS ENTIRETY.

25 Q. WELL, WE ARE SHARING EXPERIENCE TODAY.

1 THE COURT: WHY DON'T YOU GO AHEAD, MR.

2 MAAZEL.

3 BY MR. MAAZEL:

4 Q. YOU WERE ASKED BY THE COURT WHETHER AN AUDIT  
5 MIGHT CATCH SOME OF THE ANOMALIES THAT YOU ARE  
6 DESCRIBING ARE POSSIBLE IF THERE IS MALWARE OR  
7 MALFUNCTION, YES?

8 A. YES.

9 Q. AND IS IT YOUR -- I GUESS MY FIRST QUESTION IS,  
10 IS IT YOUR UNDERSTANDING THAT THESE VOTES ARE ALWAYS  
11 AUDITED BY THE COMMONWEALTH?

12 A. IT'S MY UNDERSTANDING THAT THEY WERE NOT ALWAYS  
13 AUDITED TO A HIGH LEVEL OF STATISTICAL CONFIDENCE.

14 Q. OKAY. AND IS YOUR UNDERSTANDING THE VAST  
15 MAJORITY OF VOTES ARE JUST NEVER AUDITED AT ALL?

16 A. OF BALLOTS THAT -- OR SUMMARY CARDS, THE VAST  
17 MAJORITY IN EITHER CASE ARE NOT GOING TO BE INSPECTED.

18 Q. IF THERE IS AN AUDIT OF A PARTICULAR SUMMARY  
19 CARD, LIKE THE ONE HERE IN JOINT EXHIBIT 57, IS IT -- IS  
20 EVEN THAT AUDIT ALWAYS GOING TO CATCH THE SCENARIO YOU  
21 ARE DESCRIBING?

22 A. SO NOT THE SCENARIO THAT I WAS EXPLAINING IN  
23 WHICH THERE HAS BEEN A VOTE THAT HAS BEEN LEFT OFF, THAT  
24 HAS BEEN FILLED IN ON THE SUMMARY CARD ON A SECOND PASS  
25 THROUGH THE PRINTER. NOT A CASE WHERE THE -- SO NOT

1 THAT CASE THAT I JUST DESCRIBED.

2 Q. OKAY. IF YOU COULD LOOK AT -- I NOW WANT TO  
3 TURN TO THE QUESTION OF VOTER-VERIFIABLE.

4 COULD YOU TURN TO PLAINTIFFS' EXHIBIT --  
5 I'M SORRY, JOINT EXHIBIT 60?

6 A. JOINT EXHIBIT 60, YES.

7 MR. WIYGUL: 6-0?

8 MR. MAAZEL: 6-0, WHICH I BELIEVE, YOUR  
9 HONOR, WE STIPULATED IN 107 IS THE -- IT'S FROM THE HART  
10 VOTING SYSTEM.

11 THE WITNESS: YES.

12 BY MR. MAAZEL:

13 Q. AND DO YOU UNDERSTAND THIS TO BE A DOCUMENT  
14 CREATED BY A HART BALLOT-MARKING DEVICE?

15 A. YES, I DO.

16 Q. OKAY. AND IF IT'S POSSIBLE TO PUT THAT UP WITH  
17 JX 57 NEXT TO EACH OTHER, IS THAT POSSIBLE?

18 LOOKING AT THE HART DOCUMENT, IS THAT IN  
19 YOUR VIEW A VOTER-VERIFIABLE DOCUMENT?

20 A. YOU ARE TALKING ABOUT THE JX 60 DOCUMENT?

21 Q. YES.

22 A. YES, THAT IS.

23 Q. DO YOU BELIEVE THAT THE XL DOCUMENT, JX 57, IS A  
24 VOTER-VERIFIABLE DOCUMENT?

25 A. NO. NO, IT'S NOT.

1 Q. CAN YOU EXPLAIN WHY THE HART DOCUMENT IN YOUR  
2 VIEW IS VOTER-VERIFIABLE BUT THE XL IS NOT?

3 A. WELL, THE HART DOCUMENT IS A BALLOT IN THE FULL  
4 SENSE IN THAT IT'S SHOWING ALL OF THE CHOICES. AND THE  
5 ENCODING OF THE VOTE IS SIMPLY WHAT THE VOTER CAN SEE  
6 AND INTERPRET. IT'S THE BOX THAT IS BUILT IN BY THE  
7 VOTER'S NAME.

8 IN THE CASE OF THE ES&S BALLOT ON THE  
9 LEFT ON THE SCREEN, THE VOTE AS IT'S ACTUALLY BEING READ  
10 AND TABULATED IS SOME KIND OF ENCODING IN THOSE BARCODES  
11 AT THE TOP. IT'S SIMPLY SHOWING A SUMMARY OF THE  
12 CHOICES THAT WERE ON THE -- THAT WERE ON THE SCREEN, ON  
13 THE BALLOT PRESENTED ON THE SCREEN. SO THE SUMMARY CARD  
14 INSTEAD IS ONLY GIVING INDICATIVE TEXT OF WHAT IS  
15 SUPPOSED TO, IF THE MACHINE IS FUNCTIONING CORRECTLY,  
16 MATCH WHAT IS IN THOSE BARCODES.

17 Q. IN THE XL SYSTEM, IS THERE ANY WAY FOR A VOTER  
18 TO ATTEMPT TO MATCH THE BARCODE TO A SELECTION?

19 A. NOT JUST AS A NORMAL HUMAN BEING UNAIDED BY  
20 TECHNOLOGY.

21 Q. I WANT TO TURN TO JX 12.

22 BY THE COURT:

23 Q. ON THE HART BALLOT, THE ONE ON THE LEFT.

24 A. YES, YOUR HONOR.

25 Q. WHAT IS THE MACHINE READING?



1 A. SO THE MACHINE IS READING WHETHER THOSE  
2 RECTANGLES ARE FILLED IN OR NOT.

3 Q. AND IT'S NOT READING THE PRINT?

4 A. SO IT'S --

5 Q. IT'S READING THE LOCATION OF THE RECTANGLE AND  
6 WHETHER IT'S FILLED IN OR NOT, CORRECT?

7 A. SOME OF THE HART SYSTEMS APPARENTLY, ACCORDING  
8 TO THE STATE, DO OCR AND READ THE PRINT, BUT I DON'T  
9 BELIEVE WHEN THEY ARE READING THE BALLOT THAT'S IN FRONT  
10 OF YOU.

11 Q. SO THAT IF THEY ARE FUNCTIONING PROPERLY, TO USE  
12 A PHRASE, IT READS THE LOCATION OF THE FILLED-IN SPACE  
13 AND THEN RECORDS IT, CORRECT?

14 A. THAT IS CORRECT.

15 Q. AND PRESUMABLY THE VOTER HAS NO IDEA WHETHER OR  
16 NOT THE SOFTWARE HAS BEEN COMPROMISED AND IT'S RECORDING  
17 IT CORRECTLY, RIGHT?

18 A. SO THE --

19 Q. HOW WOULD THE VOTER KNOW?

20 A. HOW THE VOTER KNOW IF IT'S COMPROMISED OR NOT?  
21 IN THE STRICTEST SENSE, THE VOTER CANNOT KNOW.

22 Q. OKAY. SO THAT IF IT'S COMPROMISED, IT --  
23 PRESUMABLY THOSE MACHINES COULD BE SUBJECT TO MALWARE  
24 WHERE A -- IF A PARTICULAR BOX WAS FILLED IN INDICATING  
25 A CERTAIN VOTE AND THE MALWARE REPORTS A DIFFERENT VOTE,

1 COULDN'T IT?

2 A. THAT IS CORRECT.

3 THE COURT: OKAY.

4 BY MR. MAAZEL:

5 Q. AND TO FOLLOW UP ON JUDGE DIAMOND'S QUESTION,  
6 HOW IS THAT DIFFERENT IN THE XL AND THE HART SYSTEMS?  
7 WHY IS THERE A DIFFERENCE BETWEEN THE TWO, EVEN GIVEN  
8 YOUR ANSWERS TO THE LAST QUESTIONS?

9 A. I THINK THE MOST SIGNIFICANT -- THE MOST  
10 SIGNIFICANT DIFFERENCE BETWEEN THOSE TWO IS THAT IN THE  
11 XL SYSTEM, THE -- NOTHING THAT THE VOTER HAS SEEN IS  
12 EVER BEING READ BY -- HAS SEEN AND BEEN ABLE TO  
13 INTERPRET IS EVER BEING READ BY THE MACHINE. EVEN IF  
14 IT'S FUNCTIONING CORRECTLY, THAT'S NOT EVER BEING READ  
15 BY THE MACHINE.

16 IN THE HART SYSTEM, IF IT'S FUNCTIONING  
17 CORRECTLY, THEN THE MARK THAT THE MACHINE IS READING IS  
18 ONE THAT THE VOTER HAS BEEN ABLE TO DIRECTLY VERIFY WITH  
19 THEIR SENSES.

20 BY THE COURT:

21 Q. AND IF THE XL MACHINE IS READING -- IS WORKING  
22 CORRECTLY, THE CHOICE OF CANDIDATE IS SOMETHING THE  
23 VOTER CAN SEE, ISN'T THAT RIGHT, IF IT'S WORKING  
24 PROPERLY?

25 A. IF IT'S WORKING PROPERLY.

1 Q. SO THERE IS REALLY NO DIFFERENCE BETWEEN THE  
2 TWO. IF THEY ARE WORKING PROPERLY, THE VOTER CAN SEE  
3 THAT HER VOTE WAS PROPERLY RECORDED. AND IF THEY ARE  
4 NOT WORKING PROPERLY, THE VOTER COULD EASILY HAVE NO  
5 IDEA. ISN'T THAT RIGHT?

6 A. IN BOTH CASES THERE IS A POSSIBILITY, YOUR  
7 HONOR.

8 BY MR. MAAZEL:

9 Q. SO IN BOTH CASES, IF IT'S NOT WORKING PROPERLY  
10 AND THERE IS AN AUDIT, WHICH AUDIT IS MUCH MORE LIKELY  
11 TO CATCH THE ERROR?

12 MR. WIYGUL: OBJECTION.

13 THE COURT: NO, HE CAN ANSWER THAT, IF HE  
14 KNOWS.

15 THE WITNESS: SO AN AUDIT IS LIKELY TO  
16 CATCH THE ERROR IN THE HART SYSTEM IF THE AUDIT IS  
17 CONDUCTED IN A ROBUST WAY. AND AN AUDIT IN THE XL  
18 SYSTEM IS ONLY GOING TO CATCH THE ERROR IF THE MACHINE  
19 WAS NOT AFFECTED AT THE TIME THAT THE BALLOT WAS  
20 TABULATED, THAT THE -- EXCUSE ME, THAT THE VOTE WAS  
21 CAST. BECAUSE IF THE MACHINE HAS BEEN COMPROMISED  
22 DURING THE VOTING PROCESS, WHAT IS PRINTED ON THE PAPER  
23 COULD BE WRONG.

24 Q. OKAY.

25 THE COURT: MR. MAAZEL, I HAVE ABSOLUTELY

1 NO IDEA WHAT THE MAN JUST SAID.

2 BY MR. MAAZEL:

3 Q. CAN YOU PUT THAT INTO --

4 THE COURT: ENGLISH?

5 BY MR. MAAZEL:

6 Q. -- LAYMAN'S TERMS?

7 A. ALL RIGHT. LET ME TRY THAT AGAIN FOR EVERYONE'S  
8 BENEFIT.

9 SO WE ARE CONSIDERING -- COULD YOU REPEAT  
10 YOUR QUESTION, PLEASE, MR. MAAZEL, JUST TO CLARIFY WHAT  
11 HYPOTHETICAL IN PARTICULAR WE ARE CONSIDERING?

12 THE COURT: I THINK HE ASKED YOU WHICH  
13 MISTAKE DURING AN AUDIT WOULD BE MORE LIKELY TO BE  
14 CAUGHT, A MISTAKE -- CAUSED BY MALWARE IN BOTH  
15 INSTANCES. A MISTAKE TO THE XL BALLOT OR A MISTAKE TO  
16 THE HART BALLOT.

17 IS THAT WHAT YOU ASKED?

18 MR. MAAZEL: YES, YOUR HONOR.

19 THE COURT: I UNDERSTAND.

20 THE WITNESS: I THINK THE REASON THAT I  
21 AM CONFUSED, AND PERHAPS WE ARE ALL CONFUSED, IS THAT IN  
22 THE CASE OF THE XL, THE MALWARE ON THE VOTING MACHINE  
23 CAN AFFECT BOTH HOW THE RECORD IS PRINTED AND HOW IT'S  
24 TABULATED. IT HAS CONTROL OVER BOTH PARTS OF THE  
25 PROCESS BECAUSE IT'S ONE MACHINE DOING BOTH, JUST AS IN

1 OTHER VVPAT SYSTEMS.

2 IN THE HART SYSTEM, THERE CAN BE SEPARATE  
3 MACHINES THAT ARE THE BALLOT-MARKING DEVICE AND THE  
4 SCANNER. AND EACH OF THOSE MIGHT INDEPENDENTLY BE  
5 COMPROMISED BY AN ATTACKER.

6 SO IN THE CASE WHERE ONLY THE SCANNER IS  
7 -- EXCUSE ME, ONLY THE -- IN THE CASE WHERE ONLY THE  
8 HART BALLOT-MARKING DEVICE IS COMPROMISED, YOU DON'T  
9 EVEN NEED TO GET TO THE STATE OF AN AUDIT FOR THE VOTER  
10 TO HAVE HAD AN OPPORTUNITY TO NOTICE ANY ERROR IN THAT  
11 PRINTOUT.

12 IN THE CASE WHERE THE TABULATORS ARE BOTH  
13 COMPROMISED, IN EITHER CASE YOU NEED A ROBUST AUDIT IN  
14 ORDER TO CATCH ANY CHANGE TO THE RECORDED VOTE, BUT IT  
15 HAS TO BE AN AUDIT THAT IS SUFFICIENTLY ROBUST IN THE  
16 CASE OF THE XL TO BE CONSIDERING THE HUMAN MARKED  
17 PORTION OF EVERY RACE.

18 MR. MAAZEL: UNLESS YOUR HONOR HAS MORE  
19 QUESTIONS, I WAS GOING TO MOVE TO ANOTHER TOPIC.

20 THE COURT: NO I HAVE HAD QUITE ENOUGH.  
21 YOU CAN MOVE ON.

22 BY MR. MAAZEL:

23 Q. SO WE SAW SOME -- WE SAW THE EXHIBITS, THE  
24 E-MAIL FROM MS. UNGER TO MYSELF ON SEPTEMBER 28, 2018.  
25 DO YOU REMEMBER THAT TESTIMONY?

1 A. YES, I DO.

2 Q. ATTACHING AN E-POLL BOOK STATUS REPORT?

3 A. YES, I DO.

4 Q. CAN YOU JUST LOOK AT THAT REPORT AT JOINT  
5 EXHIBIT 12?

6 A. JOINT EXHIBIT 12 YOU SAID?

7 YES.

8 Q. ACTUALLY, I'M SORRY, IF YOU COULD FIRST LOOK AT  
9 JOINT EXHIBIT 14, MS. UNGER'S E-MAIL. AND IN HER FIRST  
10 BULLET POINT, SHE REFERS TO THE E-POLL BOOK STATUS  
11 REPORT AND SAYS THAT THE DEPARTMENT EXPECTS THOSE  
12 SYSTEMS WILL BE PRESENTED FOR EXAMINATION IN  
13 PENNSYLVANIA, YES?

14 THE COURT: I'M SORRY, WHAT ARE YOU  
15 READING?

16 MR. MAAZEL: JUST THE END OF THE FIRST  
17 BULLET POINT, YOUR HONOR, JOINT EXHIBIT 14.

18 THE COURT: YES, THANK YOU.

19 THE WITNESS: YES, I SEE THAT.

20 BY MR. MAAZEL:

21 Q. NOW, IF YOU CAN LOOK AT THE POLL REPORT WHICH  
22 SHE SENT, YOU DID SEE A COPY OF THIS BACK IN LATE  
23 SEPTEMBER, 2018 OR EARLY OCTOBER?

24 A. YES, I DID.

25 Q. THEREABOUTS.

1 AND CAN YOU JUST DESCRIBE WHAT THIS  
2 DOCUMENT IS AS YOU UNDERSTAND IT?

3 THE COURT: ARE WE TALKING ABOUT 14?

4 MR. MAAZEL: 12.

5 THE WITNESS: SO THIS DOCUMENT, AS I  
6 UNDERSTAND IT, WAS A LIST OF THE VOTING SYSTEM SUITES  
7 THAT PENNSYLVANIA EITHER HAD CERTIFIED OR WAS  
8 CONSIDERING TESTING.

9 BY MR. MAAZEL:

10 Q. OKAY. AND SO DOES THIS POLL BOOK REPORT TELL  
11 YOU WHICH SPECIFIC SYSTEMS OR MODELS ARE BEING  
12 CONSIDERED?

13 A. WELL, EACH OF THESE -- THE COLUMN MARKED MODEL,  
14 EACH OF THE ENTRIES HERE REFERS TO A VOTING SYSTEM  
15 SUITE, WHICH IS A COLLECTION OF DIFFERENT MACHINES OFTEN  
16 INCLUDING DRE'S AND PAPERLESS DRE'S AND OTHER THINGS  
17 THAT -- AS WELL AS BALLOT-MARKING DEVICES, CENTRAL COUNT  
18 SCANNERS, PRECINCT COUNT SCANNERS, ELECTION MANAGEMENT  
19 SYSTEMS. SO THEY ARE NOT REFERRING TO SPECIFIC SYSTEMS  
20 BUT LARGE COLLECTIONS OF THEM.

21 Q. SO WHEN YOU SEE SOMETHING LIKE, I DON'T KNOW,  
22 CLEARVOTE 1.4.5, DOES THAT TELL YOU WHAT ACTUAL VOTING  
23 SYSTEMS ARE BEING CONSIDERED OR WHAT MODELS ARE BEING  
24 CONSIDERED?

25 A. IT TELLS YOU AT BEST A SUPERSET OF THE ONES THAT

1 ARE GOING TO BE CONSIDERED.

2 Q. OKAY. YOU LOOKED AT THIS AND YOU PREPARED AN  
3 E-MAIL WHICH YOU SENT TO MYSELF, IS THAT RIGHT?

4 A. THAT'S CORRECT.

5 Q. AND IF WE LOOK AT JOINT EXHIBIT 20, AN E-MAIL  
6 THAT WAS IDENTIFIED AND SENT TO MS. UNGER ON OCTOBER 9,  
7 2018. DOES THAT INCLUDE A CUT AND PASTE, WHAT YOU SENT  
8 ME?

9 A. YES, I BELIEVE SO.

10 Q. OKAY. AND SO CAN YOU JUST TELL US WHAT THIS IS  
11 THAT YOU SENT ME THAT I FORWARDED TO MS. UNGER?

12 A. WELL, THESE WERE JUST SOME QUICK INITIAL  
13 REACTIONS TO THE BROAD VOTING SYSTEM SUITES THAT ARE  
14 LISTED IN THE OTHER DOCUMENT. THIS WASN'T MEANT TO BE  
15 AN ALL-ENCOMPASSING LIST OF OUR POTENTIAL PROBLEMS WITH  
16 ALL OF THE EQUIPMENT.

17 Q. OKAY. IS THIS AN ANALYSIS OF ANY PARTICULAR  
18 VOTING SYSTEM?

19 A. NO, NOT EVEN THAT. IT'S JUST SOME QUICK INITIAL  
20 THOUGHTS.

21 Q. OKAY. AND IS THIS SOME SORT OF SUBSTITUTE FOR  
22 SEEING THE TESTING OF A PARTICULAR SYSTEM OR SEEING THE  
23 VIDEOS TESTING?

24 A. NO, IT'S NOT.

25 Q. WHY NOT?



1       A.           WELL, BECAUSE ACTUALLY WITNESSING OR  
2       PARTICIPATING IN THE TESTING PROVIDES FAR MORE  
3       INFORMATION ABOUT A, WHAT SYSTEMS AND CONFIGURATIONS OF  
4       THOSE SYSTEMS ARE BEING CONSIDERED FOR USE; AND B, JUST  
5       HOW THEY OPERATE. THERE IS NO SUBSTITUTE FOR THAT JUST  
6       BY HAVING A WHOLE SUITE OF SYSTEMS LISTED.  
7       BY THE COURT:

8       Q.           DOCTOR, YOU TESTIFIED THAT IT WAS ONLY AFTER YOU  
9       SAW THE VIDEO OF THE TEST, I GUESS IT WAS THE TESTING  
10      VIDEO FROM SEPTEMBER OF 2018, THAT YOU REALIZED THAT THE  
11      BALLOT CARD PASSES ACROSS THE PRINthead AFTER THE PERSON  
12      CASTS THEIR VOTE, CORRECT?

13     A.           EXCUSE ME, YOUR HONOR.

14     Q.           THAT'S NOT WHAT YOU TESTIFIED TO?

15     A.           I WAS REFERRING TO THE -- NOT A VIDEO IN THAT  
16      CASE BUT TO THE REPORT THAT THE STATE ASKED ME FOR  
17      INFORMATION.

18     Q.           YOU LEARNED THAT FOR THE FIRST TIME IN THE  
19      REPORT, CORRECT?

20     A.           I LEARNED FOR THE FIRST TIME THAT THE MACHINE  
21      SCANNED THE BALLOT BEFORE THE VOTER SAW IT.

22     Q.           SO THAT YOU SAY HERE, ANDREW APPEL RECENTLY  
23      WROTE ABOUT ANOTHER CONFIGURATION OF THE EXPRESSVOTE IN  
24      WHICH IT ASKS VOTERS WHETHER THEY WANT TO VERIFY THEIR  
25      BALLOTS BEFORE PRINTING THEM. DO YOU SEE THAT?

1 A. YES, I DO.

2 Q. IF THE VOTER SAYS YES, THEN THE MACHINE  
3 NECESSARILY READS IT FIRST, DOESN'T IT? AND IT PASSES  
4 ACROSS THE PRINthead. IT PASSES ACROSS THE PRINthead A  
5 SECOND TIME, DOESN'T IT?

6 A. RESPECTFULLY, YOUR HONOR, NO. THAT'S REFERRING  
7 TO ANOTHER CONFIGURATION OF THE MACHINE THAT IS NOT  
8 CERTIFIED IN PENNSYLVANIA. AND WHERE THE MACHINE  
9 PRODUCES THE SUMMARY CARD AND DOESN'T WAIT FOR THE VOTER  
10 TO LOOK AT IT OR NOT, IT JUST DEPOSITS IT INTO ITS  
11 CONTAINER.

12 Q. AND YOU WERE SAYING THAT'S AN ARRANGEMENT YOU  
13 DISAPPROVED OF?

14 A. THAT'S WHAT I WAS SAYING.

15 THE COURT: OKAY.

16 BY MR. MAAZEL:

17 Q. DO YOU SEE IN THE FIRST PARAGRAPH OF EXHIBIT 20,  
18 JOINT EXHIBIT 20 --

19 THE COURT: MAY I ASK ANOTHER QUESTION?  
20 YOU SAY AT THE BOTTOM OF THAT PARAGRAPH, PA SHOULD  
21 REQUIRE THE MACHINES TO BE CONFIGURED SO THAT EVERY  
22 VOTER HAS AN OPPORTUNITY TO SEE THEIR BALLOT AFTER IT  
23 HAS BEEN PRINTED?

24 A. YES.

25 Q. SO YOU ARE SAYING THAT THE VOTER MAKES THEIR

1 SELECTION, IT GETS PRINTED, AND THEN THE VOTER SEES IT.  
2 AND THE PURPOSE OF THE VOTER SEEING IT IS TO VERIFY IT,  
3 CORRECT?

4 A. THAT'S CORRECT. AND WHAT I --

5 Q. WELL, WAIT. DOESN'T THAT NECESSARILY MEAN IF  
6 THE VOTER SEES IT AND VERIFIES IT, IT'S GOING TO PASS  
7 BACK INTO THE MACHINE AFTERWARDS? DOESN'T THAT  
8 NECESSARILY MEAN THAT WHEN THE MACHINE GOBBLES UP THE  
9 BALLOT CARD, SOMETHING COULD BE DONE TO THE BALLOT CARD?

10 A. IT DOES NOT NECESSARILY MEAN THAT, YOUR HONOR,  
11 BECAUSE IT DOESN'T -- THE MACHINE DOES NOT HAVE TO BE  
12 DESIGNED IN A WAY THAT THE BALLOT GOES BACK PAST THE  
13 PRINTHEAD AGAIN.

14 Q. BUT YOU DIDN'T SAY THAT. IT WAS CERTAINLY A  
15 POSSIBILITY AT THE TIME YOU REVIEWED IT. WHAT WAS  
16 FOREMOST IN YOUR MIND WAS WHETHER OR NOT THE MACHINE  
17 COULD DEFAULT, NOT SHOW THE VOTER HER VOTE, THAT WAS  
18 WHAT WAS FOREMOST IN YOUR MIND?

19 A. INDEED, THAT WAS WHAT WAS FOREMOST IN MY MIND.

20 THE COURT: OKAY.

21 BY MR. MAAZEL:

22 Q. THIS PARAGRAPH THAT THE COURT IS REFERRING TO,  
23 ARE YOU REFERRING SPECIFICALLY TO THE EXPRESSVOTE XL  
24 THAT IS AT ISSUE OF THIS MOTION?

25 A. I AM REFERRING TO THE EXPRESSVOTE MACHINES

1 BROADLY, NOT TO THE XL SPECIFICALLY. THE XL WAS A BRAND  
2 NEW SYSTEM AT THE TIME. I DON'T THINK ANYONE WAS  
3 THINKING ABOUT THE XL SPECIFICALLY IN GREAT DETAIL.  
4 MAYBE SOME PEOPLE WERE, BUT IT WAS CERTAINLY VERY NEW  
5 FROM MY PERSPECTIVE, AND I WAS STILL LEARNING A LOT MORE  
6 SUBSEQUENT TO THIS ABOUT THE WAY IT OPERATED.

7 Q. AND DO DIFFERENT EXPRESSVOTES WORK IN DIFFERENT  
8 WAYS?

9 A. YES, THEY DO. AND IN FACT, THEY CAN BE  
10 CONFIGURED TO WORK IN DIFFERENT WAYS EVEN WITHIN THE  
11 SAME MACHINE. LIKE THIS AUTOCAST PROBLEM THAT WE ARE  
12 TALKING ABOUT HERE IS ONE THAT BASICALLY IS NOT EVEN  
13 VOTER-VERIFIABLE.

14 Q. OKAY. SO THIS ISSUE OF THE PIECE OF PAPER GOING  
15 PAST THE PRINthead, DID YOU HAVE ANY IDEA ABOUT THAT AS  
16 OF OCTOBER 2018?

17 A. I DIDN'T KNOW IT APPLIED TO THE XL. THAT WAS  
18 SOMETHING THAT HAD BEEN A COMPLAINT ABOUT OTHER  
19 MANUFACTURERS' SYSTEMS.

20 Q. OKAY. AND SO AT THE BOTTOM OF PARAGRAPH 1 OF  
21 JOINT EXHIBIT 20, THE BOTTOM OF THE FIRST PARAGRAPH.

22 THE COURT: ARE YOU TALKING ABOUT A MORE  
23 GRANULAR LIST?

24 MR. MAAZEL: YES.

25 THE COURT: OKAY.

1 BY MR. MAAZEL:

2 Q. DO YOU SEE THE REFERENCE TO, PLAINTIFF IS  
3 REQUESTING A MORE GRANULAR LIST OF PARTICULAR MACHINES,  
4 ELECTION SYSTEMS BEING PROPOSED FOR CERTIFICATION?

5 A. YES.

6 Q. DID YOU EVER RECEIVE THAT SORT OF LIST?

7 A. NO, I DID NOT.

8 Q. OKAY. I TAKE IT YOU UNDERSTAND THAT A  
9 SETTLEMENT AGREEMENT WAS SIGNED IN THE NEXT MONTH?

10 A. YES.

11 Q. AND YOU WERE -- YOU TESTIFIED YOU WERE  
12 DESIGNATED AS THE DESIGNEE FOR THIS PROCESS?

13 A. YES.

14 Q. AND THEN WAS THERE A PROCESS SET FORTH IN THE  
15 SETTLEMENT AGREEMENT FOR HOW INFORMATION WOULD BE SENT  
16 FROM THE DEPARTMENT TO YOU?

17 A. MY UNDERSTANDING WAS THAT THEY WOULD CONTACT ME  
18 WITH INFORMATION.

19 Q. ALL RIGHT. NOW, I AM NOT GOING TO GO THROUGH  
20 EVERYTHING WE WENT THROUGH YESTERDAY WITH MS. KOTULA. I  
21 HAVE ALL OF THE E-MAIL CORRESPONDENCE.

22 BUT IF YOU DO LOOK AT PLAINTIFFS'  
23 EXHIBIT 1001, IS THAT YOUR CORRESPONDENCE WITH MS.  
24 KOTULA ABOUT, AMONG OTHER THINGS, GETTING VIDEOS AND --

25 A. IS THAT IT ON THE SCREEN?

1 Q. YES.

2 A. YES, IF THAT'S THE EXHIBIT, THAT IS --

3 Q. YOU CAN PULL IT IN FRONT OF YOU. IT'S  
4 PLAINTIFFS' EXHIBIT 1001, TAB 1.

5 A. TAB 1, THANK YOU. YES.

6 Q. ALL RIGHT. AND SO IS THIS YOUR CORRESPONDENCE  
7 WITH MS. KOTULA BETWEEN OCTOBER 2018 AND NOVEMBER 2019?

8 A. THIS IS MY ENTIRE CORRESPONDENCE WITH THE STATE.

9 Q. OKAY. NOW, DID MS. KOTULA EVER TELL YOU THAT  
10 YOU WERE NOT ENTITLED UNDER THE SETTLEMENT AGREEMENT TO  
11 SEE VIDEOS OF TESTING?

12 A. NO, SHE DID NOT. SHE OFFERED TO PROVIDE VIDEOS  
13 OF THE TESTING.

14 Q. AND DID SHE OFFER TO PROVIDE VIDEOS BEFORE OR  
15 AFTER THE SETTLEMENT AGREEMENT WAS SIGNED?

16 A. EVEN BEFORE IT WAS SIGNED.

17 Q. WHEN DID YOU FIRST HEAR THAT MS. KOTULA HAD A  
18 VIEW THAT PLAINTIFFS WERE NOT ENTITLED UNDER THE  
19 SETTLEMENT AGREEMENT TO SEE VIDEOS?

20 A. YESTERDAY WHEN SHE WAS TESTIFYING.

21 Q. ALL RIGHT. HOW MANY TIMES DID YOU ASK MS.  
22 KOTULA BETWEEN JANUARY AND JUNE OF 2018 FOR TESTING  
23 VIDEOS, APPROXIMATELY?

24 A. I DON'T REMEMBER. PROBABLY TEN TIMES OR SO.

25 Q. I WANT TO FAST FORWARD SO WE DON'T HAVE TO COVER

1 THE GROUND WE COVERED YESTERDAY TO JUNE 5TH, 2018. IS  
2 THAT WHEN YOU RECEIVED THE ES&S VIDEOS FROM MS. KOTULA?

3 A. LET ME CONSULT MY E-MAIL CHAIN. BUT YES, I  
4 BELIEVE SO. YES.

5 Q. OKAY. AND ABOUT HOW MANY HOURS OF VIDEO DID MS.  
6 KOTULA SEND YOU?

7 A. I DON'T REMEMBER EXACTLY HOW MANY HOURS. IT WAS  
8 THREE-AND-A-HALF OR FOUR FULL DAYS WORK THAT HAD BEEN  
9 VIDEOTAPED.

10 Q. AND HOW MANY VIDEO CLIPS DID SHE SEND YOU?

11 A. MUST HAVE BEEN 30 TO 40 VIDEO CLIPS, SOMETHING  
12 LIKE THAT. SOME OF THEM LASTING AN HOUR OR MORE.

13 MR. MAAZEL: PERMISSION TO APPROACH, YOUR  
14 HONOR?

15 THE COURT: I BEG YOUR PARDON?

16 MR. MAAZEL: PERMISSION TO APPROACH THE  
17 WITNESS?

18 THE COURT: ABSOLUTELY.

19 MR. MAAZEL: THANK YOU.

20 BY MR. MAAZEL:

21 Q. I JUST WANT TO SHOW YOU WHAT -- A FLASH DRIVE  
22 THAT SAYS PX 1016.

23 A. YES.

24 Q. AND ARE THERE ANY INITIALS ON THERE?

25 A. YES, THOSE ARE MY INITIALS ON THERE.

1 Q. WHAT IS THIS FLASH DRIVE?

2 A. THIS IS A FLASH DRIVE THAT I INSPECTED YESTERDAY  
3 OR THE DAY BEFORE THAT HAD A COPY OF THE VIDEOS THAT THE  
4 STATE PROVIDED OF THE ES&S SYSTEM.

5 MR. MAAZEL: I MOVE PLAINTIFFS'  
6 EXHIBIT 1016 INTO EVIDENCE.

7 MR. WIYGUL: I AM GOING TO OBJECT, YOUR  
8 HONOR, ON SEVERAL GROUNDS. THE FIRST TIME WE LEARNED  
9 THAT PLAINTIFFS INTENDED TO USE WHAT THEY ARE CALLING PX  
10 1016 AS THEIR EXHIBIT WAS AFTER THE CLOSE OF BUSINESS ON  
11 THURSDAY. WE EXCHANGED -- STARTED EXCHANGING EXHIBITS  
12 BACK IN JANUARY FOR THE HEARING WAS SCHEDULED THEN. WE  
13 HAD EXCHANGED EXHIBITS AND THEN THURSDAY AT 6 P.M. THEY  
14 SAY WE HAVE ANOTHER EXHIBIT.

15 WE LOOKED AT IT, WE SAW IT WAS 61 VIDEOS  
16 THAT APPEARED TO BE ABOUT 17 HOURS OF FOOTAGE TOTAL. I  
17 WENT BACK TO PLAINTIFFS' COUNSEL AND SAID THERE  
18 LITERALLY ARE 61 VIDEOS. CAN YOU TELL US WHICH ONES YOU  
19 ACTUALLY INTEND TO USE SO THAT WE WANT TO REVIEW THEM  
20 FOR AUTHENTICITY AND OTHER REASONS.

21 THEY WOULD NOT ANSWER THAT QUESTION.  
22 THEY SAID WE DO INTEND TO MOVE ALL 61 VIDEOS INTO  
23 EVIDENCE. AND WE SAID WE DON'T HAVE TIME TO REVIEW  
24 17 HOURS OF FOOTAGE BETWEEN NOW AND THE HEARING AND  
25 AUTHENTICATE IT. IT'S APPARENT JUST FROM THE STILL



1 SHOTS THAT ARE -- THAT STAND IN FOR EACH OF THE 61  
2 VIDEOS, THAT SEEMS LIKE A DECENT AMOUNT OF THE FOOTAGE  
3 REGARDING THE EXAMINATION OF THE MACHINES, OTHER THAN  
4 THE XL MACHINE THAT IS AT ISSUE HERE. SO WITH THAT, WE  
5 MAY HAVE OTHER OBJECTIONS, DEPENDING ON WHAT THEY ARE  
6 TRYING TO OFFER, BUT WE OBJECT.

7 THE COURT: MR. MAAZEL.

8 MR. MAAZEL: YOUR HONOR, THESE ARE THEIR  
9 OWN VIDEOS. SO THE IDEA --

10 THE COURT: THEY ARE NOT COUNSEL'S  
11 VIDEOS.

12 MR. MAAZEL: IT'S THEIR CLIENTS.

13 THE COURT: DID HE ACCURATELY DESCRIBE  
14 YOUR RESPONSE, THAT YOU WOULD NOT TELL HIM WHAT YOU WERE  
15 GOING TO USE AND YOU INTEND TO INTRODUCE THEM ALL?

16 MR. MAAZEL: THAT'S NOT QUITE ACCURATE,  
17 YOUR HONOR.

18 THE COURT: WHAT IS ACCURATE?

19 MR. MAAZEL: WHAT IS ACCURATE IS THAT WE  
20 WOULD LIKE THIS TO BE IN EVIDENCE BECAUSE THESE ARE THE  
21 VIDEOS THAT WERE SENT TO DR. HALDERMAN. WE DON'T  
22 ACTUALLY INTEND TO GO THROUGH THE VIDEOS NOW, BUT WE DO  
23 THINK IT SHOULD BE IN EVIDENCE BECAUSE THESE ARE THE  
24 VIDEOS THAT THEY PRODUCED TO HIM BACK IN JUNE.

25 THE COURT: I'M SORRY, THE RECORD HERE IS

1 NOT INTENDED TO BE A MUSEUM. WHAT PURPOSE WILL IT SERVE  
2 IF IT'S IN EVIDENCE? WHAT ARE YOU GOING TO USE IT FOR,  
3 PARTICULARLY WHICH PARTS OF THE VIDEO ARE YOU GOING TO  
4 USE?

5 WHY DON'T WE TAKE A BREAK AND SEE IF YOU  
6 CAN WORK THAT OUT WITH MR. WIYGUL. HOW MANY HOURS OF  
7 VIDEO IS ON THIS THING?

8 MR. MAAZEL: COUNSEL SAID 17 HOURS. I  
9 DON'T DISPUTE THAT.

10 THE COURT: I AM NOT GOING TO ADMIT  
11 17 HOURS OF VIDEO THAT THE OTHER SIDE HAS NOT BEEN GIVEN  
12 THE OPPORTUNITY TO REVIEW. IF YOU CAN WORK IT OUT WITH  
13 MR. WIYGUL, FINE. OTHERWISE, I AM GOING TO ASK YOU TO  
14 PINPOINT PARTICULAR CLIPS, IF YOU WILL, OF THE VIDEO AND  
15 I WILL DO THEM ONE BY ONE. BUT I AM NOT GOING TO ALLOW  
16 YOU TO INTRODUCE 17 HOURS OF STUFF THAT THEY HAVE NOT  
17 HAD A CHANCE TO REVIEW BECAUSE BEFORE THEY WERE  
18 RETAINED, OVER A YEAR BEFORE THEY WERE RETAINED, VIDEOS  
19 WERE MADE.

20 (BRIEF RECESS TAKEN.)

21 THE COURT: PLEASE BE SEATED.

22 YES, MR. MAAZEL.

23 MR. MAAZEL: REGRETFULLY, YOUR HONOR, WE  
24 HAVE NOT WORKED OUT AN ARRANGEMENT. I WILL JUST SAY  
25 THAT I BELIEVE DR. HALDERMAN HAS AUTHENTICATED THE

1 DOCUMENT THROUGH HIS TESTIMONY AND THE COURT WILL RULE.  
2 AND WE UNDERSTAND WHATEVER THE COURT'S RULING IS AND WE  
3 WILL MOVE ON.

4 THE COURT: LET ME ASK MR. WIYGUL.

5 MR. WIYGUL: YOUR HONOR, I JUST WANT TO  
6 MAKE CLEAR FOR THE RECORD, YOUR HONOR, TO THE EXTENT WE  
7 REACHED AN AGREEMENT, MY UNDERSTANDING FROM TALKING TO  
8 MR. MAAZEL, I ASKED HIM ARE THERE PARTICULAR VIDEOS HE  
9 WOULD LIKE US TO REVIEW RIGHT NOW, AND HE SAID NO. MY  
10 UNDERSTANDING IS THAT HIS ONLY POSITION IS HE WANTS TO  
11 MOVE ALL OF THEM INTO EVIDENCE.

12 THE COURT: ALL OR NOTHING, MR. MAAZEL?

13 MR. MAAZEL: I JUST FEEL IT SHOULD BE A  
14 PART OF THE RECORD. THESE ARE THE VERY TESTING VIDEOS  
15 THAT DR. HALDERMAN TRIED TO GET FROM THEIR CLIENT FOR  
16 FIVE MONTHS AND I JUST --

17 THE COURT: I HAVE ASKED YOU WHICH  
18 PARTICULAR POINTS OR CLIPS IN THE VIDEO BEAR ON THIS  
19 DISPUTE. YOU HAVE DECLINED TO TELL ME. I WILL NOT  
20 ALLOW AN EXHIBIT THAT THE OTHER SIDE HAS NOT BEEN GIVEN  
21 THE OPPORTUNITY TO REVIEW. I WILL NOT ALLOW IT INTO  
22 EVIDENCE IN ITS ENTIRETY.

23 MR. MAAZEL: I UNDERSTAND YOUR RULING,  
24 YOUR HONOR.

25 BY MR. MAAZEL:

1 Q. DR. HALDERMAN, DID MS. KOTULA OR ANYONE FROM THE  
2 DEPARTMENT EVER INFORM YOU THAT THE XL SYSTEM HAD BEEN  
3 TESTED?

4 A. NO.

5 Q. DID MS. KOTULA OR ANYONE FROM THE DEPARTMENT  
6 EVER TELL THAT YOU THE XL WAS GOING TO BE CERTIFIED?

7 A. NO.

8 Q. OR THAT IT HAD BEEN CERTIFIED?

9 A. NO.

10 Q. SO YOU TESTIFIED THAT IT WAS JUNE 5, 2019 WHEN  
11 YOU RECEIVED THE ES&S TESTING VIDEOS, YES?

12 A. YES.

13 Q. AND WAS THERE ANYTHING HAPPENING IN YOUR LIFE IN  
14 PARTICULAR IN JUNE OF 2019?

15 A. YES, I GOT MARRIED ABOUT TWO WEEKS LATER.

16 Q. AND AFTER YOUR WEDDING YOU DID WHAT?

17 A. MY WIFE AND I TRAVELED FOR THE NEXT WEEK OR SO.  
18 WE HAD A HONEYMOON I SUPPOSE, AND YES.

19 Q. SO WHEN DID YOU REVIEW THESE 17 HOURS OR SO OF  
20 VIDEOS THAT WERE GIVEN TO YOU?

21 A. IT WAS IN THE BEGINNING OF JULY.

22 Q. AND THE LETTER THAT THE PLAINTIFF SENT, THE  
23 FIRST MEET AND CONFER LETTER TO THE DEFENDANTS WAS WHEN?

24 A. WAS NOT LONG AFTER THAT. IT WAS IN -- SOMETIME  
25 IN JULY, I DON'T RECALL EXACTLY.

1 Q. WAS IT, IN YOUR VIEW, IMPORTANT TO SEE THE  
2 TESTING VIDEOS -- WITHDRAWN.

3 WOULD IT HAVE BEEN ADVISABLE TO WRITE A  
4 MEET AND CONFER LETTER TO THE DEFENDANTS ABOUT THIS  
5 SYSTEM BEFORE SEEING THE VIDEOS?

6 MR. WIYGUL: OBJECTION.

7 THE COURT: I'M SORRY, I COULDN'T HEAR  
8 YOUR QUESTION.

9 BY MR. MAAZEL:

10 Q. WOULD IT BE ADVISABLE --

11 THE COURT: ADVISABLE?

12 BY MR. MAAZEL:

13 Q. IN YOUR VIEW, WOULD IT BE --

14 MR. MAAZEL: I AM TRYING TO FIND A  
15 NON-LEADING WAY TO SAY THIS, YOUR HONOR.

16 THE COURT: LEAD AWAY.

17 BY MR. MAAZEL:

18 Q. WASN'T IT IMPORTANT TO SEE THE ES&S TESTING  
19 VIDEOS BEFORE THE PLAINTIFFS SENT A LETTER TO THE  
20 DEFENDANTS SAYING THAT THE SYSTEM WAS NOT COMPLIANT?

21 MR. WIYGUL: OBJECTION.

22 THE COURT: NO, HE CAN ANSWER THAT.

23 THE WITNESS: IN MY VIEW, IT WAS VERY  
24 IMPORTANT THAT THE VIDEOS ARE -- THE ACTUAL  
25 CERTIFICATION TESTS ARE A VERY RICH SOURCE OF -- AND

1       REALLY IRREPLACEABLE SOURCE TO ME OF INFORMATION ABOUT  
2       HOW PENNSYLVANIA INTENDED TO USE THE MACHINES AND THE  
3       WAY THAT THEY WORKED IN PRACTICE.

4       BY MR. MAAZEL:

5       Q.       IN YOUR VIEW, BASED UPON YOUR EXPERIENCE WITH  
6       THE DEPARTMENT AND MS. KOTULA, DID THE PLAINTIFFS DELAY  
7       BEFORE THE BEGINNING OF THE MEET AND CONFER PROCESS?

8                       MR. WIYGUL:  OBJECTION.

9                       THE COURT:  I'M SORRY, DID THE DEFENDANTS  
10       DELAY?

11       BY MR. MAAZEL:

12       Q.       IN YOUR VIEW, DR. HALDERMAN, GIVEN THE  
13       INTERACTION YOU HAD WITH THE DEPARTMENT AND MS. KOTULA,  
14       DID THE PLAINTIFFS DELAY BEFORE STARTING THE MEET AND  
15       CONFER PROCESS?

16                       MR. WIYGUL:  OBJECTION.

17                       THE COURT:  NO, OVERRULED.

18                       THE WITNESS:  I DON'T THINK THE  
19       PLAINTIFFS DELAYED.  AS SOON AS I HAD THE INFORMATION  
20       THAT WE HAD BEEN WAITING FOR FOR MONTHS, WE STARTED --  
21       THERE WAS A VERY SHORT TIME BEFORE THE MEET AND CONFER  
22       PROCESS BEGAN.

23       BY MR. MAAZEL:

24       Q.       DO YOU BELIEVE THAT ANYONE DELAYED?

25       A.       I CAN TELL YOU THAT ALL OF THIS COULD HAVE

1       HAPPENED MUCH SOONER HAD I HAD ACCESS TO THOSE VIDEOS  
2       PROMPTLY AFTER WE REQUESTED THEM.

3       Q.       AND WHO WAS RESPONSIBLE FOR FAILING TO GIVE YOU  
4       ACCESS TO THE VIDEOS?

5                       MR. WIYGUL:  OBJECTION.

6                       THE COURT:  IF HE KNOWS.  HE WAS HERE IN  
7       COURT, HE CAN REPEAT WHAT HE HEARD IN COURT.

8                       THE WITNESS:  I BELIEVE THAT THE STATE  
9       WAS RESPONSIBLE FOR THAT DELAY.  
10       BY MR. MAAZEL:

11       Q.       BY THE WAY, YOU MENTIONED THERE WAS A  
12       REEXAMINATION OF THIS XL SYSTEM I BELIEVE IN  
13       SEPTEMBER OF 2019?

14       A.       I THINK THAT'S RIGHT, SEPTEMBER.

15       Q.       DID THE DEPARTMENT INVITE YOU TO THAT  
16       RECERTIFICATION PROCESS?

17       A.       NO, IT DID NOT.

18       Q.       DID THEY TELL YOU WHERE OR WHEN IT WOULD BE?

19       A.       NO.

20       Q.       DID THEY EVER SEND YOU VIDEOS OF THE TESTING  
21       THEY DID IN SEPTEMBER 2019 OF THE XL SYSTEM?

22       A.       NO.

23       Q.       JUST BEFORE WE CONCLUDE, DR. HALDERMAN, I JUST  
24       WANT TO MAKE SURE WE HAVE A BASIC UNDERSTANDING OF THE  
25       XL, IN LAYMAN'S TERMS.

1 A. YES.

2 Q. AM I CORRECT THAT THE VOTER MAKES A SELECTION,  
3 THEN THE MACHINE PRINTS ON A PIECE OF PAPER, THEN IT  
4 RECORDS THE VOTE, THEN THE VOTER HAS A CHANCE TO LOOK AT  
5 THE PAPER TO SEE IF IT WAS CORRECT, AND THEN THE PAPER  
6 GOES PAST THE PRINTHEAD, IS THAT CORRECT?

7 A. THAT IS CORRECT.

8 MR. MAAZEL: OKAY, NO FURTHER QUESTIONS.

9 MR. WIYGUL: I AM GOING TO GO TO THE  
10 PODIUM, IF THAT'S ALL RIGHT WITH YOU?

11 THE COURT: THAT'S FINE.

12 CROSS-EXAMINATION

13 BY MR. WIYGUL:

14 Q. GOOD AFTERNOON, DR. HALDERMAN, OR MORNING. IT  
15 IS STILL MORNING, EXCUSE ME, GOOD MORNING.

16 A. I THINK I AM GLAD FOR THAT.

17 Q. WE HAVE TALKED ABOUT VIDEOS A LOT IN THIS CASE.  
18 AND YOU HAVE TALKED ABOUT IT IN YOUR DIRECT EXAMINATION,  
19 AND I BELIEVE YOUR TESTIMONY WAS YOU RECEIVED THE VIDEOS  
20 IN I BELIEVE THE RECORD SHOWS JUNE 5TH, CORRECT, OF  
21 2018?

22 A. THAT'S CORRECT.

23 Q. AND THEN YOU HAD PERSONAL OBLIGATIONS, YOU WENT  
24 ON A -- WAS IT A HONEYMOON?

25 A. OF SORTS, YES.



1 Q. AND THEN SO YOU GOT AROUND TO LOOKING AT THE  
2 VIDEOS IN EARLY JULY, CORRECT?

3 A. YES.

4 Q. AND I KNOW YOUR COUNSEL WAS INTENT ON  
5 ESTABLISHING THAT THAT HAPPENED BEFORE THEY FILED THEIR  
6 INITIAL COMPLAINT ABOUT THE XL MACHINE AND ALLEGING THAT  
7 IT VIOLATED THE SETTLEMENT AGREEMENT. AND THAT LETTER  
8 WAS FILED ON JULY 29TH, CORRECT?

9 A. I BELIEVE THAT IS CORRECT.

10 Q. YOU ARE FAMILIAR WITH THAT LETTER?

11 A. I DON'T HAVE IT IN FRONT OF ME.

12 PARDON ME?

13 Q. ARE YOU FAMILIAR WITH THAT LETTER?

14 A. I HAVE NOT SEEN IT IN SOME TIME.

15 Q. WERE YOU CONSULTED BY PLAINTIFFS' COUNSEL BEFORE  
16 THAT LETTER WAS SENT OUT?

17 MR. MAAZEL: OBJECTION.

18 MR. WIYGUL: JUST A YES OR NO, I DON'T  
19 PLAN TO DELVE INTO THE DETAILS OF THE COMMUNICATION.

20 MR. MAAZEL: COMMUNICATIONS WITH THE  
21 EXPERT ARE PRIVILEGED, YOUR HONOR.

22 THE COURT: NO, I DON'T WANT TO KNOW THE  
23 SUBSTANCE OF THE COMMUNICATION. YOU CAN ANSWER THAT.

24 THE WITNESS: WE DID SPEAK BETWEEN THE  
25 TIME I REVIEWED THE VIDEOS AND THE LETTERS, WHEN THE

1 LETTER WAS SENT.

2 MR. WIYGUL: AND CAN WE PULL UP THAT  
3 EXHIBIT, PLEASE. LET'S SEE IF I CAN FIND THE NUMBER.

4 MR. ARONCHICK: 43.

5 MR. WIYGUL: 43.

6 BY MR. WIYGUL:

7 Q. JOINT EXHIBIT 43, JX.

8 YOU SAID YOU HAVE NOT SEEN THIS IN A  
9 WHILE. DOES THIS REFRESH YOUR MEMORY ABOUT THE CONTENT  
10 OF THIS LETTER, DR. HALDERMAN?

11 A. YES.

12 Q. AND IN THIS LETTER, THERE IS ONLY ONE FEATURE OF  
13 THE EXPRESSVOTE XL THAT IS THE SUBJECT OF PLAINTIFFS'  
14 COMPLAINT, CORRECT?

15

16 I CAN BE MORE SPECIFIC IF YOU WOULD LIKE.

17 A. YES.

18 Q. AND THAT IS THE FACT THAT THE XL PRINTS A BALLOT  
19 OR WHATEVER YOU WANT TO CALL IT, A SUMMARY CARD WITH  
20 BARCODES AND THE BARCODES ARE WHAT ARE SCANNED TO  
21 TABULATE THE VOTE, CORRECT?

22 A. IT APPEARS THAT'S THE FOCUS OF THE LETTER, YES.

23 Q. WELL, IS THERE ANY OTHER FEATURE THAT IS A  
24 PREDICATE FOR THE -- THE BASIS FOR THE COMPLAINT  
25 PLAINTIFFS ARE MAKING UNDER THE SETTLEMENT AGREEMENT IN

1 THIS LETTER?

2 A. I'M SORRY. CAN YOU REPEAT THE QUESTION NOW THAT  
3 I HAVE HAD A CHANCE TO --

4 Q. IS THERE ANY OTHER FEATURE OF THE XL THAT IS THE  
5 BASIS FOR ANY COMPLAINT THAT PLAINTIFFS RAISE IN THIS  
6 JULY 29TH LETTER?

7 A. OTHER THAN THE -- OTHER THAN -- EXCUSE ME, OTHER  
8 THAN WHAT?

9 Q. OTHER THAN WHAT IS DESCRIBED --  
10 THE COURT: DON'T YOU WANT TO ANSWER HIS  
11 QUESTIONS, SIR? IT'S SUCH A SIMPLE QUESTION.

12 ASK IT FOR A THIRD TIME.

13 BY MR. WIYGUL:

14 Q. THIS LETTER.

15 A. YES.

16 Q. IT STATES THAT THE XL PRINTS VOTES IN BARCODE  
17 FORM ON THE PAPER, CORRECT, AND THAT THE BARCODES ARE  
18 WHAT ARE SCANNED TO TABULATE THE VOTE?

19 THE COURT: WHY DON'T WE MAKE IT SIMPLE.  
20 THE ONLY FEATURE OF THE XL SYSTEM THAT MR. MAAZEL SAYS  
21 VIOLATES THE AGREEMENT IS THAT THE BARCODE IS WHAT IS  
22 RECORDED AND NOT THE LINGUISTIC TEXT OF THE VOTE,  
23 CORRECT?

24 THE WITNESS: YES, I THINK WITH A  
25 CLARIFICATION, YOUR HONOR.

1 THE COURT: THANK YOU.

2 BY MR. WIYGUL:

3 Q. YOU DIDN'T NEED TO WATCH THE VIDEOS THAT THE  
4 STATE PROVIDED IN JUNE TO KNOW THAT THERE IS A BARCODE  
5 PRINTED ON THE XL CALLED A PAPER RECORD TO TRY TO REACH  
6 AGREEMENT, CORRECT? YOU KNEW THAT BEFORE YOU WATCHED  
7 THE VIDEOS?

8 A. I DID, BUT WE DIDN'T KNOW WHAT OTHER FEATURES OF  
9 THE XL MIGHT BE RELEVANT OR NOT.

10 Q. THEY ARE NOT OTHER FEATURES MENTIONED HERE,  
11 THERE IS JUST THIS ONE FEATURE, CORRECT?

12 A. THAT IS WHAT THEY MENTIONED.

13 Q. AND YOU HAD NOT WATCHED THE VIDEO AT THIS POINT?

14 A. YES.

15 Q. AND THE ONLY FEATURE MENTIONED HERE IS THE  
16 BARCODE AND YOU KNEW ABOUT THAT BEFORE YOU WATCHED THE  
17 VIDEO, CORRECT?

18 A. I DID KNOW THAT BEFORE.

19 Q. IN FACT, YOU KNEW THAT IN OCTOBER OF 2018 WHEN  
20 YOU WERE PROVIDING FEEDBACK THROUGH MR. MAAZEL TO THE  
21 DEFENDANTS ON THE EXPRESSVOTE MACHINES, CORRECT?

22 A. YES, I BELIEVE I DID.

23 Q. NOW, IN YOUR TESTIMONY IN ANSWER TO MR. MAAZEL'S  
24 AND THE COURT'S QUESTIONS, YOU WERE QUITE ADAMANT THAT  
25 -- CAN WE CALL UP JX 57, WHICH HAS BEEN ESTABLISHED

1 THAT'S AN EXAMPLE OF THE XL BALLOT, CORRECT?

2 A. YES.

3 Q. YOU WERE QUITE ADAMANT IN SAYING THAT THIS  
4 SHOULD NOT BE CALLED A BALLOT, CORRECT?

5 A. THAT'S RIGHT. TECHNICALLY THIS IS A SUMMARY  
6 CARD.

7 Q. AND YOU ACTUALLY CORRECTED THE COURT WHEN THE  
8 COURT REFERRED TO IT AS A BALLOT. YOU SAID, YOUR HONOR,  
9 THAT'S NOT RIGHT, IT'S ACTUALLY A SUMMARY CARD?

10 A. THAT'S RIGHT.

11 Q. HAVE YOU EVER REFERRED TO THIS TYPE OF BALLOT AS  
12 A BALLOT -- I'M SORRY, HAVE YOU EVER REFERRED TO THIS  
13 TYPE OF PAPER, THIS PAPER RECORD OF THE VOTE, AS A  
14 BALLOT?

15 A. I MIGHT HAVE WHEN SPEAKING IMPRECISELY.

16 Q. WERE YOU SPEAKING IMPRECISELY IN THAT WAY WHEN  
17 YOU WERE PROVIDING FEEDBACK THROUGH MR. MAAZEL TO THE  
18 DEFENDANTS ABOUT THESE VERY MACHINES?

19 A. I MIGHT HAVE. I DON'T RECALL.

20 Q. YOU BEGAN YOUR TESTIMONY BY ASSERTING THAT IN  
21 YOUR VIEW THE EXPRESSVOTE XL SHOULD BE CLASSIFIED AS A  
22 DRE WITH A VVPAT. DO YOU REMEMBER THAT?

23 A. YES.

24 Q. AND THE COURT SPECIFICALLY ASKED YOU ABOUT DRE'S  
25 IN PENNSYLVANIA AND WHETHER THE DRE'S THAT WERE IN USE

1 IN PENNSYLVANIA HAD VVPATS OR WHETHER THEY WERE NEWER  
2 ELECTRONIC PAPERLESS MACHINES. DO YOU REMEMBER THAT  
3 QUESTION?

4 A. YES.

5 Q. AND I BELIEVE YOUR ANSWER WAS, CORRECT ME IF I'M  
6 WRONG, I DON'T HAVE THE TRANSCRIPT, BUT I BELIEVE YOUR  
7 ANSWER IS YOU DON'T KNOW THE ANSWER TO THAT, IS THAT  
8 RIGHT?

9 A. I THINK THE THING I SAID I DIDN'T KNOW THE  
10 ANSWER TO WAS ABOUT THE AUDITING PROCEDURES THAT WERE  
11 USED WITH DRE'S WITH VVPATS IN PENNSYLVANIA.

12 Q. WHICH MEANS YOU DON'T KNOW WHETHER THE DRE'S IN  
13 USE IN PENNSYLVANIA HAD VVPATS?

14 A. I BELIEVE SOME OF THEM DID.

15 Q. DO YOU REMEMBER -- YOU CAME INTO THIS CASE  
16 PRETTY MUCH AT THE OUTSET, RIGHT. THERE WAS A COMPLAINT  
17 FILED RIGHT AFTER THE 2016 ELECTION, THERE WAS A  
18 PRELIMINARY INJUNCTION HEARING THAT WAS SCHEDULED VERY  
19 SHORTLY AFTER YOU CAME IN, AND I THINK YOU PROVIDED AN  
20 AFFIDAVIT OR DECLARATION BEFOREHAND, BUT YOU DIDN'T  
21 TESTIFY AT THAT PRELIMINARY INJUNCTION HEARING, CORRECT?

22 A. YES, THAT'S CORRECT.

23 Q. WASN'T THE WHOLE POINT OF WHAT PLAINTIFFS WERE  
24 SEEKING AT THAT POINT, OR AT LEAST A GOOD CHUNK OF WHAT  
25 THEY WERE SEEKING, A FORENSIC EXAMINATION OF THE DRE

1 MACHINES IN PENNSYLVANIA PRECISELY BECAUSE THERE WAS NO  
2 PAPER RECORD?

3 A. SOME OF THEM DIDN'T HAVE THE PAPER RECORD, AND I  
4 DO BELIEVE THAT'S WHAT THE PLAINTIFFS WERE SEEKING.

5 THE COURT: DIDN'T YOU TESTIFY AT THE  
6 PRELIMINARY INJUNCTION HEARING?

7 THE WITNESS: I DID, YOUR HONOR.

8 THE COURT: OKAY.

9 BY MR. WIYGUL:

10 Q. CAN WE CALL UP PLAINTIFFS' COMPLAINT IN THIS  
11 CASE WHICH I BELIEVE IS DX A. YOU'VE SEEN THIS DOCUMENT  
12 BEFORE, RIGHT?

13 A. I HAVE BUT NOT FOR YEARS.

14 Q. OKAY. YOU HAD SEEN IT BEFORE YOU TESTIFIED AT  
15 THE PRELIMINARY INJUNCTION HEARING, CORRECT?

16 A. YES, I BELIEVE SO.

17 Q. CAN WE GO TO PARAGRAPH 15, PLEASE.

18 THE COURT: 15?

19 MR. WIYGUL: YES.

20 BY MR. WIYGUL:

21 Q. AND CAN YOU BLOW THAT UP, PLEASE.

22 SECOND SENTENCE SAYS, DRE MACHINES IN  
23 PENNSYLVANIA DO NOT LEAVE A PAPER TRAIL ACCESSIBLE TO  
24 VOTERS OR ANYONE ELSE. VOTERS TOUCH BOXES ON A SCREEN  
25 AND GET NO PAPER CONFIRMATION OF THEIR VOTE AND HOPE

1       THEIR VOTES ARE COUNTED ACCURATELY.

2                       DO YOU SEE THAT?

3       A.           YES.

4       Q.           AND CAN YOU GO TO PARAGRAPH 21, PLEASE.  SORRY,  
5       CAN YOU BLOW THAT UP?

6                       THIS PARAGRAPH SAYS:  FOR COUNTIES THAT  
7       USE DRE MACHINES, THERE IS NO PAPER BALLOT AND IT IS  
8       IMPOSSIBLE FOR VOTERS TO VERIFY EVEN A SINGLE DRE VOTE  
9       ON A PIECE OF PAPER.

10                      DO YOU SEE THAT?

11      A.           YES, I DO.

12      Q.           SO IT WAS CLEAR FROM PLAINTIFFS' COMPLAINT THAT  
13      WHAT THEY WERE SEEKING OR PART OF WHAT THEY WERE SEEKING  
14      WAS VOTING MACHINES THAT WOULD PROVIDE A PAPER TRAIL,  
15      CORRECT, THAT COULD BE VERIFIED?

16      A.           FROM THEIR -- YES, THAT IS PART OF WHAT THEY  
17      WERE SEEKING.

18      Q.           SO LET'S TALK A LITTLE BIT MORE ABOUT DRE'S WITH  
19      VVPATS.  NOW, SOME BALLOT-MARKING DEVICES, I THINK YOU  
20      EXPLAINED, THE VOTER INPUTS THEIR SELECTIONS ON A  
21      TOUCHSCREEN, THE MACHINE THEN PRINTS A BALLOT OR PRINTS  
22      A PAPER RECORD OF THE VOTE, IF YOU PREFER, CORRECT?

23      A.           SOME PRINT A BALLOT AND SOME PRINT A SUMMARY  
24      CARD, THAT'S CORRECT.

25      Q.           A PAPER RECORD OF THE VOTE.  THEY ALL PRINT



1 PAPER RECORDS OF THE VOTE?

2 A. YES.

3 Q. AND SO FAR IN THIS DESCRIPTION, THAT DESCRIBES  
4 THE EXPRESSVOTE XL MACHINE, CORRECT?

5 A. YES.

6 Q. AND THEN IN SOME MACHINES, THE MACHINE THEN  
7 EJECTS THE BALLOT, RIGHT?

8 A. IT --

9 Q. THE PAPER RECORD?

10 A. YES.

11 Q. RIGHT. AND THEN THE VOTER GOES ACROSS THE ROOM  
12 OR WHEREVER THEY HAVE TO GO TO A SEPARATE OPTICAL SCAN  
13 MACHINE, CORRECT?

14 A. YES.

15 Q. AND THEN INSERT THE BALLOT, AND THEN THE OPTICAL  
16 SCAN MACHINE SCANS AND TABULATES THAT BALLOT, CORRECT?

17 A. THAT'S CORRECT.

18 Q. AND FOR HAND-MARKED PAPER BALLOT, THE SETUP  
19 WOULD TYPICALLY BE THE VOTER GETS THE BALLOT THAT IS  
20 BLANK, HAS NOT BEEN FILLED IN WITH SELECTIONS, THEY MARK  
21 IT, AND THEN THEY TAKE IT TO AN OPTICAL SCAN MACHINE  
22 WHICH SCANS THE BALLOT AND TABULATES THE VOTE, CORRECT?

23 A. YES.

24 Q. AND WHAT THE XL MACHINE DOES IS THAT SCANNING  
25 FUNCTION, RATHER THAN HAVING THEM TAKE THE BALLOT ACROSS

1 THE ROOM, THE SCANNING FUNCTION IS PART OF THE SAME  
2 MACHINE, CORRECT?

3 MR. MAAZEL: OBJECTION TO THE WORD  
4 "BALLOT."

5 MR. WIYGUL: PAPER RECORD, I'M SORRY,  
6 FORCE OF HABIT, YOUR HONOR.

7 THE WITNESS: THOSE FUNCTIONS ARE  
8 INTEGRATED INTO THE SAME PHYSICAL AND LOGICAL UNIT.  
9 BY MR. WIYGUL:

10 Q. AND AGAIN, WHAT THE MACHINE IS SCANNING TO  
11 TABULATE THE VOTE, AND BY THE MACHINE NOW I AM REFERRING  
12 TO THE XL SPECIFICALLY, IS THAT PAPER RECORD?

13 A. IS THE BARCODE, SPECIFICALLY.

14 Q. ON THE PAPER RECORD?

15 A. ON THE PIECE OF PAPER.

16 Q. CORRECT?

17 JUST AS AN OPTICAL SCAN MACHINE, WHEN YOU  
18 FEED IN THE HAND-MARKED PAPER BALLOT IS SCANNING THE  
19 MARKS AND LOOKING AT THE TIMING CODES AND BASED ON THAT  
20 USING THE SOFTWARE TO DETERMINE HOW THAT VOTE SHOULD BE  
21 TABULATED, CORRECT?

22 A. SO -- YES.

23 Q. OKAY. YOU ARE AWARE THAT THERE IS ANOTHER  
24 EXPRESSVOTE MACHINE BESIDES THE EXPRESSVOTE XL?

25 A. AT LEAST ONE OTHER.

1 Q. AND THE "XL" IN EXPRESSVOTE XL STANDS FOR EXTRA  
2 LARGE, CORRECT?

3 A. I DON'T KNOW WHAT IT STANDS FOR.

4 Q. AND ANOTHER EXPRESSVOTE MACHINE IS EXPRESSVOTE  
5 2.1, CORRECT?

6 A. YES.

7 Q. AND THAT'S PART OF THE SAME SUITE, RIGHT?

8 A. YES.

9 Q. CAN YOU CALL UP JX 56, PLEASE?

10 THE COURT: 56?

11 MR. WIYGUL: 56.

12 BY MR. WIYGUL:

13 Q. AND I BELIEVE THE TESTIMONY HAS BEEN THAT THIS  
14 IS AN EXAMPLE OF A PAPER VOTING RECORD PRODUCED BY THE  
15 EXPRESSVOTE 2.1. DO YOU HAVE ANY REASON TO DISPUTE  
16 THAT?

17 A. NO, I HAVE NO REASON TO DISPUTE THAT.

18 Q. THE FORMAT OF THIS EXPRESSVOTE NON XL PAPER  
19 RECORD IS THE SAME AS THE XL PAPER RECORD, RIGHT? IN  
20 FACT -- CAN YOU CLOSE THAT EXHIBIT 57?

21 AND BY FORMAT I MEAN THAT THERE ARE  
22 BARCODES AT THE TOP ON WHICH THE VOTER SELECTS --  
23 THERE'S A MASTER BARCODE AND THEN THERE ARE BARCODES AND  
24 CODING OF OTHER SELECTIONS, CORRECT?

25 A. YES.

1 Q. AND THEN PLAIN TEXT READABLE BY THE VOTER THAT  
2 SAYS WHAT THE SELECTIONS ARE UNDERNEATH, CORRECT?

3 A. THAT'S CORRECT.

4 Q. AND THE FORMAT OF 56 AND 57, THE EXPRESSVOTE 2.1  
5 AND THE EXPRESSVOTE XL, PAPER RECORD ARE THE SAME,  
6 CORRECT?

7 A. THE FORMAT IS THE SAME BUT THE MODALITY OF WHAT  
8 THE VOTER DOES WITH IT IS COMPLETELY DIFFERENT.

9 Q. I AM JUST ASKING YOU ABOUT THE PAPER RECORD IN  
10 PARTICULAR.

11 A. YES.

12 Q. YOU AGREE THEY ARE THE SAME?

13 A. YES.

14 Q. IN TERMS OF THE MODALITIES AS YOU DESCRIBE IT,  
15 THE EXPRESSVOTE 2.1 CAN BE CONFIGURED, AND IN FACT IN  
16 SOME COUNTIES IN PENNSYLVANIA IS CONFIGURED, TO ACT AS  
17 BOTH A BALLOT-MARKING DEVICE AND A TABULATOR, CORRECT?

18 A. YES, IT CAN BE.

19 Q. AND WHEN IT IS CONFIGURED IN THAT WAY, IT IS  
20 SIMILARLY A HYBRID MACHINE IN THE WAY THAT THE XL IS,  
21 CORRECT?

22 A. THAT'S RIGHT, THAT THE XL CAN'T BE CONFIGURED  
23 ANY OTHER WAY IN PENNSYLVANIA.

24 Q. SO THE ANSWER IS YES, CORRECT?

25 A. YES.

1 Q. OKAY. THE EXPRESSVOTE 2.1 MACHINE, AFTER THE  
2 VOTER SAYS PRINT THE PAPER RECORD, THE MACHINE EJECTS  
3 IT, RIGHT?

4 A. YES.

5 Q. OKAY. THE VOTER CAN THEN INSPECT IT AND VERIFY  
6 IT, CORRECT?

7 A. YES, AND I THINK YOU ARE HITTING ON THE CRITICAL  
8 DIFFERENCE.

9 THE COURT: PLEASE, PLEASE, ANSWER THE  
10 QUESTION THAT IS ASKED AND NOTHING MORE.

11 MR. WIYGUL: I'M SORRY, YOUR HONOR.

12 THE COURT: GO AHEAD.

13 BY MR. WIYGUL:

14 Q. AND THEN THE VOTER, ONCE THE VOTER IS SATISFIED  
15 THAT THE PAPER RECORD ACCURATELY REFLECTS HIS OR HER  
16 VOTE INSERTS IT BACK INTO THE MACHINE, CORRECT?

17 A. YES.

18 Q. AND THEN THE MACHINE -- THE SAME MACHINE THAT IT  
19 POPPED OUT OF THAT PRINTED IT, RIGHT?

20 A. IT CAN BE THE SAME MACHINE.

21 Q. AND IN FACT, IT'S THE SAME SLOT, RIGHT? THE  
22 VOTER INSERTS IT BACK INTO THE SAME SPOT IT POPS OUT OF?

23 A. SO IT CAN BE THE SAME MACHINE OR THEY CAN INSERT  
24 IT INTO A SCANNER, INTO A DS200.

25 Q. AND IF THE VOTER INSERTS IT BACK INTO THE

1 MACHINE, THAT'S HOW IT'S CONFIGURED, THE VOTER INSERTS  
2 IT INTO THE SAME SLOT THAT THE PRINTED PAPER RECORD IS  
3 PRODUCED TO THE VOTER FROM?

4 A. I BELIEVE THAT'S HOW IT WORKS, YES.

5 Q. AND THEN THE MACHINE SCANS AND TABULATES THE  
6 VOTE FROM THAT PAPER RECORD, CORRECT?

7 A. YES.

8 Q. ALL RIGHT. SO THE XL, THE XL GENERALLY IS NOT  
9 DESIGNED TO EJECT THE BALLOT FOR THE VOTER TO HANDLE,  
10 CORRECT?

11 A. IT CAN'T EJECT IT FOR THE VOTER TO HANDLE IN --  
12 AND THEN COUNT IT IN THE PENNSYLVANIA CONFIGURATION.

13 Q. THERE IS NO WAY IT CAN DO THAT?

14 A. UNLESS THE VOTER SAYS THAT THEY WANT TO CANCEL  
15 THE BALLOT, IT'S NOT GOING TO EJECT IT.

16 Q. IF THE VOTER SAYS --

17 A. AND EXCUSE ME, SUMMARY CARD.

18 Q. LET ME ASK ONE QUESTION FIRST. THE EXPRESSVOTE  
19 2.1 THAT WE HAVE BEEN TALKING ABOUT CONFIGURED IN  
20 TABULATOR MODE, IT IS YOUR POSITION THAT THAT IS ALSO A  
21 DRE WITH A VVPAT OR DO YOU TAKE A DIFFERENT VIEW?

22 A. I THINK THAT THAT IS -- IF -- THERE IS A CERTAIN  
23 AMOUNT OF GRAY AREA BETWEEN THE TWO, AND THE XL IS -- MY  
24 POSITION IS THAT THE XL IS NOT EVEN IN THE GRAY AREA.  
25 THAT MAY BE IN A GRAY AREA. I HAVE NOT THOUGHT ABOUT

1 THAT TERRIBLY DEEPLY YET.

2 Q. SO YOUR ANSWER IS I DON'T KNOW FOR WHETHER THE  
3 EXPRESSVOTE 2.1 IN TABULATOR MODE --

4 THE COURT: I THINK HIS ANSWER IS HE HAS  
5 NOT MADE UP HIS MIND.

6 THE WITNESS: I THINK THAT'S PROBABLY  
7 RIGHT.

8 BY MR. WIYGUL:

9 Q. SO THE EXPRESS VOTE -- GOING BACK TO HOW THE  
10 EXPRESSVOTE XL FUNCTIONS, IT GENERALLY DOES NOT EJECT  
11 THE BALLOT, RIGHT? HOWEVER, IT CAN EJECT THE BALLOT,  
12 IT'S PHYSICALLY CAPABLE OF EJECTING THE BALLOT, CORRECT?

13 A. AND IN FACT, LATER VERSIONS OF THE SOFTWARE THAN  
14 ONCE CERTIFIED IN PENNSYLVANIA CAN BE USED IN THAT WAY,  
15 THAT EJECTS THE BALLOT TO BE SCANNED SOMEWHERE ELSE,  
16 WHICH IS -- IF IT'S SCANNED SOMEWHERE ELSE, NOT LIKE THE  
17 VVPAT.

18 Q. WHICH IS PROOF THAT THE HARDWARE ITSELF CAN BE  
19 CABLE OF EJECTING THE BALLOT, CORRECT?

20 A. YES, THOUGH IT CAN ALSO BE CONFIGURED NOT TO  
21 SHOW THE BALLOT TO THE VOTER AT ALL.

22 THE COURT: SIR, WERE YOU HERE WHEN I  
23 INDICATED THAT MR. GATES WAS ACTING LIKE A LAWYER AND  
24 NOT A WITNESS? HE WAS ADVOCATING FOR HIS SIDE. WERE  
25 YOU HERE FOR THAT?

1 THE WITNESS: YES, I WAS.

2 THE COURT: I WOULD ASK YOU TO BEAR THAT  
3 ADMONITION IN MIND.

4 GO AHEAD.

5 BY MR. WIYGUL:

6 Q. SINCE YOU MENTIONED THAT THOUGH, DR. HALDERMAN,  
7 YOUR TESTIMONY WAS ALSO THAT THAT CONFIGURATION WHERE A  
8 VOTER CAN OPT OUT OF HAVING THE OPPORTUNITY TO REVIEW  
9 THEIR BALLOT HAD IT NOT BEEN CERTIFIED, THAT'S NOT  
10 ALLOWED IN PENNSYLVANIA, CORRECT?

11 A. THAT'S CORRECT.

12 Q. SO I THINK WHERE WE WERE WAS THE XL MACHINE CAN  
13 EJECT THE BALLOT TO BE HANDLED BY THE VOTER, CORRECT?

14 A. NOT AS USED IN PENNSYLVANIA, NO.

15 Q. I AM JUST ASKING WHETHER IT'S PHYSICALLY CAPABLE  
16 OF DOING THAT?

17 A. THE SAME HARDWARE IS PHYSICALLY CAPABLE.

18 Q. AND IN FACT, THE VERSION OF THE XL THAT IS  
19 CONFIGURED FOR USE IN PENNSYLVANIA DOES EJECT THE BALLOT  
20 IN SOME CIRCUMSTANCES, CORRECT?

21 A. THE SUMMARY CARD, AND IF THE VOTER -- IF THE  
22 VOTER WISHES TO SPOIL IT AND NOT CAST IT.

23 Q. AND WHEN IT'S EJECTED IN THOSE CIRCUMSTANCES,  
24 ISN'T IT TRUE THAT IF THE VOTER THEN INSPECTS THE BALLOT  
25 AND DECIDES ACTUALLY, YOU KNOW WHAT, I ACTED TOO



1 HASTILY, I AM ACTUALLY FINE WITH THIS, I WANT THIS TO BE  
2 COUNTED AS MY VOTE, THEY CAN THEN INSERT IT BACK IN THE  
3 MACHINE WHERE IT CAN BE TABULATED, CORRECT?

4 A. I DON'T KNOW THE ANSWER TO THAT.

5 Q. YOU DON'T KNOW THE ANSWER TO THAT.

6 ISN'T IT ALSO TRUE THAT IN LIEU OF THAT  
7 THEY COULD TAKE THAT SAME BALLOT CARD TO ANOTHER  
8 SCANNING MACHINE, A SEPARATE AND ES&S SCANNING MACHINE  
9 AND HAVE IT TABULATED BY THAT SCANNING MACHINE?

10 A. I DON'T KNOW THE ANSWER TO THAT IN THE  
11 CONFIGURATION THAT PENNSYLVANIA USES.

12 Q. OKAY. SO AS I UNDERSTOOD YOUR DECLARATION,  
13 SIR -- FIRST OF ALL, YOU DID SUBMIT A DECLARATION IN  
14 SUPPORT OF THE PREVIOUS MOTION IN THIS PROCEEDING,  
15 CORRECT?

16 A. I DID.

17 Q. I AM GOING TO RELY A LITTLE BIT MORE HEAVILY ON  
18 YOUR DECLARATION BECAUSE I THINK IT WAS MORE LUCID TO ME  
19 AND I COULD UNDERSTAND IT A LITTLE BIT MORE EASILY THAN  
20 YOUR TESTIMONY TODAY, SO LET ME KNOW IF YOU THINK YOU  
21 ARE SAYING SOMETHING DIFFERENT IN YOUR TESTIMONY TODAY  
22 THAN YOU SAID IN YOUR DECLARATION.

23 AS I UNDERSTOOD YOUR DECLARATION, YOU  
24 WERE IDENTIFYING THREE THEORETICAL VULNERABILITIES THAT  
25 YOU SAW AS ARISING OUT OF THE DESIGN OF THE XL MACHINE.

1 IS THAT A FAIR CHARACTERIZATION OF YOUR VIEW?

2 A. THE THREE -- YES. DEPENDING ON WHAT YOU MEAN BY  
3 THEORETICAL, BUT YES.

4 Q. AND ONE OF THEM THAT YOU IDENTIFIED WAS -- AROSE  
5 FROM THE FACT THAT THE XL MACHINE PRINTS AND SCANS  
6 BARCODES, CORRECT?

7 A. YES.

8 Q. AND YOU THOUGHT IT WAS -- YOU SAID IT WOULD BE  
9 FEASIBLE FOR MALWARE TO CAUSE THE MACHINE TO PRINT  
10 BARCODES THAT DIDN'T CORRESPOND TO THE TEXT THAT WAS  
11 PRINTED BELOW IN THAT VOTER-VERIFIABLE, CORRECT?

12 A. YES.

13 Q. SITTING HERE TODAY, YOU DON'T HAVE ANY EVIDENCE  
14 THAT ANY EXPRESSVOTE XL MACHINE HAS ACTUALLY DONE THAT  
15 IN ANY ELECTION, ISN'T THAT RIGHT?

16 A. NO, I DON'T.

17 Q. YOU TALKED EARLIER ABOUT AUDITS. AND --

18 THE COURT: IF IT'S NEVER HAPPENED, HOW  
19 DO YOU KNOW IT'S POSSIBLE?

20 THE WITNESS: WELL, BECAUSE THE  
21 EXPRESSVOTE MACHINES ARE COMPLEX COMPUTER SYSTEMS, AND  
22 WHAT GETS PRINTED THERE IS UNDER THE CONTROL OF THAT  
23 COMPUTER SYSTEM. AND EVERY COMPUTER SYSTEM OF  
24 SUFFICIENT COMPLEXITY HAS HAD EXPLOITABLE  
25 VULNERABILITIES BEFORE.

1 THE COURT: OKAY.

2 BY MR. WIYGUL:

3 Q. AND JUST SO WE HAVE A SENSE OF HOW MANY  
4 ELECTIONS WE ARE TALKING ABOUT, YOU DESCRIBED -- I THINK  
5 IT WAS THREE, MAYBE IT WAS TWO ELECTIONS IN PENNSYLVANIA  
6 WHERE THE XL HAS BEEN USED. DO YOU RECALL THAT  
7 TESTIMONY?

8 A. I AM SORRY, FROM THE DECLARATION DO YOU MEAN?

9 Q. NO, I MEAN FROM YOUR DIRECT TESTIMONY. YOU  
10 DESCRIBED, I DON'T KNOW IF IT WAS 2 OR 3 OR 4, BUT A  
11 HANDFUL OF ELECTIONS WHERE YOU KNEW THE XL HAD BEEN USED  
12 TO DATE, CORRECT?

13 A. NO, I DON'T RECALL TESTIFYING ABOUT THAT.

14 Q. STRIKE THAT. I WILL ASK THE QUESTION.

15 THE XL HAS BEEN CERTIFIED FOR USE IN  
16 PENNSYLVANIA, CORRECT, WE KNOW THAT?

17 A. YES.

18 Q. IT HAS ALSO BEEN CERTIFIED FOR USE IN SEVERAL  
19 OTHER STATES, CORRECT?

20 A. YES.

21 Q. AND IT HAS BEEN USED IN ELECTIONS IN  
22 PENNSYLVANIA, CORRECT?

23 A. ALL VERY RECENTLY, AND SINCE 2016 WHEN THE LAST  
24 MAJOR ATTACKS ON AN ELECTION OCCURRED, TO MY KNOWLEDGE.

25 Q. I UNDERSTAND THAT AS A YES.

1 IT HAS BEEN USED IN ELECTIONS IN OTHER  
2 STATES, CORRECT?

3 A. YES.

4 Q. AND IT WAS -- IT HAD BEEN USED IN ELECTIONS  
5 PRIOR TO THE SIGNING OF THE SETTLEMENT AGREEMENT IN THIS  
6 CASE, CORRECT?

7 A. I DON'T KNOW FOR SURE.

8 Q. OKAY. IN NONE OF THOSE ELECTIONS ARE YOU AWARE  
9 OF THE EXPRESSVOTE XL EVER HAVING PRINTED BARCODES THAT  
10 FAILED TO MATCH THE HUMAN READABLE TEXT, IS THAT RIGHT?

11 A. I AM NOT AWARE THAT PEOPLE CHECKED IN THE VAST  
12 MAJORITY OF THOSE CASES.

13 Q. IN TERMS OF PEOPLE CHECKING, THERE HAS BEEN  
14 TESTIMONY ABOUT A PILOT RISK-LIMITING AUDIT THAT  
15 PHILADELPHIA PERFORMED IN CONJUNCTION WITH --  
16 IMMEDIATELY FOLLOWING THIS PAST NOVEMBER GENERAL  
17 ELECTION, CORRECT?

18 A. YES.

19 Q. AND IN FACT, I DON'T KNOW IF THIS CAME OUT IN  
20 YOUR DIRECT TESTIMONY, BUT YOU ARE AFFILIATED WITH THE  
21 UNIVERSITY OF MICHIGAN, IS THAT RIGHT?

22 A. I AM.

23 Q. YOU ARE A PROFESSOR THERE?

24 A. I AM.

25 Q. AND UNIVERSITY OF MICHIGAN WAS ACTUALLY ONE OF A

1 CONSORTIUM OF GROUPS AND MIGHT HAVE HAD I THINK IT WAS  
2 THE AUDIT BRAIN TRUST THAT WAS INVOLVED IN THE DESIGN  
3 AND IMPLEMENTATION OF THAT PILOT AUDIT IN PHILADELPHIA,  
4 CORRECT?

5 A. NO, I DON'T THINK THAT'S CORRECT THAT WE WERE,  
6 AS AN ORGANIZATION, INVOLVED IN THAT. I THINK THERE  
7 MIGHT HAVE BEEN ONE PERSON WHO ACTUALLY IS A PH.D.  
8 STUDENT WHO HAS A MICHIGAN AFFILIATION THAT WAS  
9 INVOLVED, BUT I DON'T KNOW FOR SURE.

10 Q. NOT JUST A PH.D. STUDENT, YOUR GRADUATE STUDENT  
11 IN PARTICULAR, CORRECT?

12 A. THAT'S CORRECT.

13 Q. AND SO THAT -- WHEN TALKING -- WE'VE HEARD ABOUT  
14 THE SIZE OF PHILADELPHIA AS A VOTING JURISDICTION. YOU  
15 DON'T DISPUTE THAT IT'S A RELATIVELY LARGE VOTING  
16 JURISDICTION, RIGHT?

17 A. IT IS LARGE.

18 Q. SO THERE WAS A RISK-LIMITING PILOT AUDIT IN  
19 PHILADELPHIA, AND THAT'S ONE OF THE ELECTIONS WHERE  
20 THERE IS NO EVIDENCE OF ANY MISMATCH BETWEEN THE  
21 BARCODES AND THE PRINTED TEXT, CORRECT?

22 A. THAT'S CORRECT.

23 Q. NOW, LET'S GO BACK TO TALKING ABOUT HAND-MARKED  
24 BALLOTS AND OPTICAL SCAN MACHINES FOR A SECOND.

25 LET'S SAY THAT THERE IS HAND-MARKED

1       BALLOT AND I NEED TO FILL IN A BUBBLE NEXT TO EITHER --  
2       I WILL BE ACCOMMODATING TO THE WITNESS, MICHIGAN OR OHIO  
3       STATE. SO THAT'S THE ELECTION.

4       A.       RIGHT.

5       Q.       AND I FILL IN THE BUBBLE NEXT TO MICHIGAN, I  
6       WANT TO VOTE FOR MICHIGAN. IT'S POSSIBLE THAT THE  
7       SCANNING MACHINE, WHICH RUNS ON SOFTWARE, CORRECT?

8       A.       YES.

9       Q.       THE SCANNING MACHINE HAS BEEN HACKED SO IT SAYS  
10      WHENEVER YOU SEE A BUBBLE FILLED IN AT THE COORDINATE  
11      THAT HAPPENS TO BE NEXT TO THE MICHIGAN TEXT, WHICH IS  
12      NOT READ BY THE SCANNING MACHINE, CORRECT, THE TEXT?

13      A.       THE BUBBLE IS WHAT IS SENSED.

14      Q.       SO THE MACHINE HAS BEEN PROGRAMMED TO SAY,  
15      WHENEVER YOU SEE A BUBBLE THERE NEXT TO MICHIGAN, YOU  
16      SHOULD COUNT THAT AS A VOTE FOR OHIO STATE. THAT IS  
17      FEASIBLE, CORRECT? MALWARE COULD DO THAT.

18      A.       YES.

19      Q.       AND THE VOTER WOULD NOT HAVE ANY IDEA THAT THAT  
20      HAD HAPPENED. THERE IS NO REASON TO THINK THE VOTER  
21      WOULD, RIGHT?

22      A.       THAT'S RIGHT.

23      Q.       AND THE PROTECTION THAT ONE WOULD HOPE THAT  
24      MICHIGAN FANS WOULD HAVE IN A SITUATION LIKE THAT IS  
25      FROM SOMETHING LIKE A POST-ELECTION AUDIT, CORRECT?

1       A.       THE PROTECTION COMES FROM TWO THINGS, FROM THE  
2       VOTER KNOWING THAT THE BALLOT REFLECTS THEIR INTENT, AND  
3       FROM THE AUDIT WITHOUT MACHINERY IN THE WAY, INSPECTING  
4       A SUFFICIENT NUMBER OF THOSE BALLOTS TO BE CONFIDENT  
5       THAT ALL OF THEM MATCHED -- THE WHOLE SET MATCHES THE  
6       OUTCOME.

7       BY THE COURT:

8       Q.       HOW WOULD SOMEBODY GET MALWARE INTO ONE OF THESE  
9       XL MACHINES, SAY THE ONE RIGHT THERE.   HOW WOULD THEY DO  
10      THAT?

11      A.       WELL, SO THERE ARE A NUMBER OF WAYS THAT VOTING  
12      MACHINE MALWARE CAN BE SPREAD.   IT CAN BE SPREAD PRIOR  
13      TO -- IN THE MANUFACTURING PROCESS OF THE MACHINE IT  
14      COULD POTENTIALLY BE SPREAD.   IT COULD BE POTENTIALLY  
15      SPREAD WHEN ELECTION OFFICIALS ARE PROGRAMMING THE  
16      MACHINE BEFORE THE ELECTION, WHEN THEY ARE LOADING THE  
17      PROGRAMMING THAT TELLS IT HOW THE BALLOT IS LAID OUT AND  
18      HOW IT SHOULD BE COUNTING THEM.   AND IT COULD BE  
19      POTENTIALLY SPREAD BY SOMEONE WHO HAS PHYSICAL ACCESS TO  
20      THE MACHINE.

21      Q.       THE MACHINES, 3,700 I THINK IS WHAT WAS SAID,  
22      ARE IN THE POLLING PLACES IN PHILADELPHIA.   WHY DON'T  
23      YOU ASSUME FOR A MOMENT THAT THEY HAVE BEEN SUBJECT TO  
24      VARIOUS CHECKS.   WE MAY GET TESTIMONY ON THAT.   AS I  
25      RECALL WE HAD A FAIR AMOUNT OF TESTIMONY ON THAT ON IN

1       2016.

2                   ONCE THE MACHINES ARE OUT BEFORE THE  
3       POLLS OPEN, YOU ARE SAYING THAT SOMEONE WOULD HAVE TO  
4       WHAT, GET INTO THE POLLING PLACE AND DO WHAT TO THE  
5       MACHINE, PHYSICALLY DO WHAT TO THE MACHINE?

6       A.           SO IT IS POSSIBLE BEFORE THE POLLS HAVE EVEN  
7       OPENED --

8       Q.           YOU REALLY DON'T WANT TO ANSWER THE QUESTION I  
9       ASKED, DO YOU?

10                   I AM TELLING YOU, IF SOMEONE WANTS TO  
11       INSERT MALWARE INTO THE MACHINE, HOW WOULD HE OR SHE DO  
12       IT?

13       A.           IF THEY HAVEN'T PRIOR TO THE OPENING OF THE  
14       POLLS?

15       Q.           YES.

16       A.           SO AFTER THE MACHINE IS ALREADY IN THE POLLING  
17       PLACE, THERE ARE A FEW DIFFERENT WAYS THAT I CAN IMAGINE  
18       SOMEONE MIGHT --

19       Q.           YOU CAN IMAGINE SOMEONE MIGHT.

20       A.           THERE ARE --

21       Q.           YOU ARE UNAWARE OF ANYONE EVER HAVING ACTUALLY  
22       DONE IT. HAVE YOU EVER SEEN IT DONE?

23       A.           I DON'T. I HAVE NO EVIDENCE THAT ANYONE HAS  
24       EVER DONE THAT TO THESE MACHINES.

25       Q.           HAVE YOU EVER SEEN IT DONE AS AN EXPERIMENT?



1 A. NO, I HAVEN'T.

2 Q. SO YOU ARE GOING TO IMAGINE. SO LET'S IMAGINE.  
3 COULD WE TAKE THE -- MS. FERRARI, COULD YOU TAKE THE  
4 VEIL OFF THE MACHINE?

5 MR. FIELD: YOUR HONOR, THE MACHINE HAS  
6 SEALS ON IT THAT ARE THERE AT THE START OF THE ELECTION  
7 DAY. MR. LYNCH CAN TAKE THOSE OFF SO THAT --

8 THE COURT: I JUST WANT THE CURTAIN  
9 REMOVED.

10 MR. FIELD: THE CURTAIN IS LITERALLY  
11 SEALED.

12 THE COURT: THE CURTAIN IS SEALED?

13 MR. FIELD: YES.

14 THE COURT: SO THEY WOULD BE SEALED --  
15 WELL, HE IS NOT TESTIFYING.

16 MR. FIELD: WE CAN DOING THAT LATER, IF  
17 YOU WANT.

18 THE COURT: LET'S ASSUME FOR A MOMENT --  
19 YOU CAN SIT DOWN. IT'S OKAY.

20 BY THE COURT:

21 Q. SO THE FIRST THING THE PERSON WOULD HAVE TO DO  
22 IS BREAK THE SEAL ON THE TARP THAT IS COVERING THE  
23 MACHINE, CORRECT?

24 A. THAT'S CORRECT.

25 Q. AND THEN DO WHAT? HAVE YOU EVER OPENED UP ONE

1 OF THESE MACHINES YOURSELF?

2 A. I HAVE NOT OPENED UP AN EXPRESSVOTE XL. SO THIS  
3 WOULD BE -- THIS IS THE FIRST TIME THAT I WOULD BE  
4 SEEING IT OPENED UP LIKE THAT. I HAVE BROKEN SEALS LIKE  
5 THAT BEFORE, BUT...

6 Q. OKAY. WHY DON'T YOU GO ON?

7 A. ONE THAT DOES NOT LEAVE EVIDENCE.

8 MR. WIYGUL: THANK YOU, YOUR HONOR.

9 BY MR. WIYGUL:

10 Q. I THINK WE WERE TALKING ABOUT THIS HYPOTHETICAL  
11 MICHIGAN-OHIO STATE ELECTION CONDUCTED ON A HAND-MARKED  
12 PAPER BALLOT FOR THE OPTICAL SCAN TABULATION, RIGHT?

13 A. YES, I THINK SO.

14 Q. DO YOU RECALL THE EXAMPLE?

15 A. YES.

16 Q. AND I THINK YOU HAD JUST TESTIFIED THAT THE WAY,  
17 OR AT LEAST ONE OF THE WAYS THAT MICHIGAN FANS WOULD BE  
18 PROTECTED IN A CIRCUMSTANCE LIKE THAT IS BY AN AUDIT  
19 WHICH WOULD COMPARE BY MANUALLY INSPECTING WHERE THE  
20 MARKS WERE, WERE THEY NEXT TO MICHIGAN OR OHIO STATE,  
21 AND DOING A COUNT THAT WAY AND COMPARING THAT COUNT WITH  
22 WHAT THE MACHINE COUNT WAS, CORRECT?

23 A. WELL, THE AUDIT IS READING THE TEXT THAT THE  
24 VOTER CAN SEE AND SEEING THAT THE OVAL IS FILLED IN,  
25 YES.

1 Q. YES. THAT'S BASICALLY HOW THE AUDIT WORKS,  
2 CORRECT?

3 A. THAT'S WHAT THEY ARE SAYING. YES.

4 Q. AND THAT'S THE BASIC MECHANICS OF THE AUDIT.

5 A. YES.

6 Q. AND THERE'S STATISTICAL QUESTIONS ABOUT WHAT  
7 DEGREE OF CONFIDENCE DO YOU WANT TO HAVE AND HOW FAR  
8 APART IS THE VOTE AT THE OUTSET THAT HELPED YOU TO  
9 DETERMINE WHAT THE RIGHT SAMPLE SIZE OF BALLOTS TO  
10 INSPECT, CORRECT?

11 A. THAT'S RIGHT.

12 Q. AT THE END OF THE DAY, YOU ARE COMPARING THE  
13 TEXT THAT A HUMAN BEING CAN READ WITH THE MACHINE COUNT,  
14 CORRECT?

15 A. YES.

16 Q. SIMILARLY WHEN YOU DO AN AUDIT OF THE  
17 EXPRESSVOTE XL OR THE EXPRESSVOTE 2.1 FOR THAT MATTER  
18 BALLOT, YOU ARE COMPARING THE TEXT THAT THE VOTER IS  
19 ABLE TO READ AND VERIFY WITH THE COUNTS IN THE MACHINE  
20 AS PRODUCED BY THE SCANNED BARCODES, CORRECT?

21 A. YOU ARE COMPARING THE -- YES, THAT'S CORRECT.

22 Q. AND SO WHAT THE AUDIT IS DESIGNED TO DO, AMONG  
23 OTHER THINGS, PERHAPS, IS TO IDENTIFY IF THERE IS A  
24 MISMATCH BETWEEN THE INFORMATION CODED IN THE BARCODES  
25 AND THE PLAIN TEXT SELECTIONS THAT THE VOTER HAS

1 VERIFIED, CORRECT?

2 A. THAT MAY NOT BE THE DESIGN INTENT OF THE AUDIT.  
3 THE DESIGN INTENT IS TO VERIFY THE ELECTION OUTCOME, IF  
4 THAT IS HOW YOUR AUDIT IS FUNCTIONING, TYPICALLY, YES.

5 Q. BUT IN THE COURSE OF CONDUCTING THAT AUDIT, I  
6 THINK YOUR TESTIMONY WAS YOU ARE GOING TO BE COMPARING  
7 THE MACHINE COUNT FROM THE BARCODE WITH THE MANUAL  
8 INSPECTED COUNT FROM THE TEXT, RIGHT?

9 A. YES, THAT'S CORRECT.

10 Q. SO IF THERE WERE A DISCREPANCY, THAT WOULD BE  
11 IDENTIFIED ALONG THE WAY, CORRECT?

12 A. THAT'S RIGHT.

13 Q. OKAY. LET'S TALK ABOUT WHAT I UNDERSTOOD TO BE  
14 THE SECOND THEORETICAL ISSUE THAT YOU RAISED IN YOUR  
15 DECLARATION. AND I AM JUST GOING TO CALL THAT FOR  
16 SHORTHAND THE PRINthead ISSUE. YOU WILL UNDERSTAND WHAT  
17 I MEAN BY THAT?

18 A. YES.

19 Q. THE DESIGN FEATURE THERE THAT YOU ARE FOCUSED ON  
20 IS THE FACT THAT THE PAPER AFTER THE VOTER HAS VERIFIED  
21 IT IN THE WINDOW, RIGHT, AND ON IT'S WAY TO THE BALLOT  
22 BOX IT TRAVELS IN A PATH THAT TAKES IT UNDERNEATH THE  
23 PRINthead, CORRECT?

24 A. YOU ARE ASSUMING THE VOTER HAS VERIFIED IT, BUT  
25 YES.

1 Q. OKAY. THAT'S THE DESIGN FEATURE ON WHICH THIS  
2 THEORETICAL VULNERABILITY IS BASED, CORRECT?

3 A. YES.

4 Q. YOU SAID IT WOULD BE FEASIBLE FOR MALWARE TO  
5 CAUSE THE PRINthead TO ADD ADDITIONAL RACES OR  
6 SELECTIONS TO THE PAPER AFTER THE VOTER HAS REVIEWED IT.  
7 THAT'S WHAT YOU SAID IN YOUR DECLARATION, CORRECT?

8 A. YES.

9 Q. IS THAT CONSISTENT WITH THE TESTIMONY YOU HAVE  
10 GIVEN TODAY?

11 A. YES.

12 Q. NOW, YOU SEE -- YOU ACTUALLY DON'T SEE AN  
13 EXAMPLE OF THIS IN EXHIBIT 57, YOU DON'T SEE AN EXAMPLE  
14 OF A RACE WHERE THE VOTER HASN'T MADE THE SELECTION.  
15 BUT IN THE IDENTICAL FORMAT BALLOT FOR THE 2.1 HERE,  
16 THIS SAMPLE DOES SHOW EXAMPLES OF RACES IN WHICH THERE  
17 IS AN UNDERVOTE, RIGHT, THE VOTER COULD HAVE MADE  
18 ADDITIONAL SELECTIONS BUT CHOSE NOT TO?

19 A. I'M SORRY, WHERE ARE YOU POINTING TO?

20 Q. 56, I'M SORRY, IS ON THE LEFT, 57 IS THE ONE ON  
21 THE RIGHT.

22 SO MY POINT IS SIMPLY 57 DOES NOT SHOW US  
23 AN EXAMPLE OF AN UNDERVOTE, THE VOTER HAS -- LOOKS LIKE,  
24 AT LEAST, THE VOTER HAS MADE A SELECTION IN EVERY  
25 OPPORTUNITY THEY HAVE. BY CONTRAST, ON THE LEFT-HAND

1       EXAMPLE, THERE ARE EXAMPLES OF UNDERVOTES, CORRECT?

2       A.       I DON'T KNOW WHAT THE VOTER DID IN 57, BUT --

3       Q.       THAT'S WHAT THE PAPER REFLECTS, CORRECT?

4       A.       YES.

5       Q.       AND SO WHEN THAT HAPPENED, WHEN THE VOTER COULD  
6       HAVE VOTED FOR MORE JUDGES OF THE COURT OF COMMON PLEAS  
7       THAN IN FACT THEY DID, IT'S NOT BLANK, RIGHT, THE  
8       MACHINE PRINTS IN NO SELECTION THERE?

9       A.       IF IT'S FUNCTIONING THE WAY IT'S INTENDED TO,  
10      THAT'S RIGHT.

11      Q.       THAT'S HOW IT WAS DESIGNED AT LEAST TO FUNCTION  
12      IN THIS SAMPLE ELECTION, CORRECT?

13      A.       THAT'S RIGHT.

14      Q.       THAT IS THE WAY IT CAN BE DESIGNED TO FUNCTION  
15      IN PENNSYLVANIA ELECTIONS, CORRECT?

16      A.       WELL, IF THERE -- IF THE MACHINE HAS BEEN  
17      INFECTED WITH MALWARE, THEN IT MIGHT JUST LEAVE THAT  
18      BLANK.

19      Q.       THAT WAS NOT MY QUESTION, SIR.

20                   IT CAN BE DESIGNED TO FUNCTION THAT WAY  
21      IN PENNSYLVANIA ELECTIONS, CORRECT?

22      A.       YES, WHEN IT'S FUNCTIONING IN A NON-ATTACK  
23      STATE.

24      Q.       IN FACT, IT HAS BEEN DESIGNED TO FUNCTION THAT  
25      WAY IN PENNSYLVANIA ELECTIONS, CORRECT?

1 A. YES.

2 Q. SO THE THEORETICAL POSSIBILITY THAT YOU RAISE,  
3 AND I JUST WANT TO MAKE SURE I UNDERSTAND, IS THAT THE  
4 MACHINE, DESPITE BEING DESIGNED TO PRINT NO SELECTION,  
5 RIGHT, WOULD, IN FACT, LEAVE A BLANK SPACE THERE. AND  
6 THE VOTER WOULD SEE THE BLANK SPACE AND THINK ALL IS  
7 WELL. AND THEN SOMEHOW THE MALWARE WOULD CAUSE THE  
8 MACHINE TO PRINT BACK ON THE BALLOT ON ITS WAY TO THE  
9 BALLOT BOX A SELECTION IN THAT BLANK SPACE?

10 A. YES, THAT'S EXACTLY RIGHT.

11 Q. SO THAT SCENARIO, AND I THINK THE COURT'S  
12 QUESTIONING ELUCIDATED IT, BUT I JUST WANT TO BE CLEAR.  
13 THAT SCENARIO -- EVEN THAT SCENARIO ONLY APPLIES IN  
14 CASES WHERE THERE IS AN UNDERVOTE, CORRECT?

15 A. WELL, THE MACHINE COULD ALSO LEAVE OFF ENTIRE  
16 RACES AND SO FORTH. THAT MIGHT BE SPOTTED BY THE VOTER,  
17 THOUGH.

18 Q. RIGHT. IF THE VOTER WERE ACTUALLY VERIFYING  
19 THAT THE RECORD REFLECTED HIS OR HER VOTE IT WOULD BE,  
20 RIGHT?

21 A. IF THEY WERE CAREFULLY VERIFYING IT.

22 Q. SIMILARLY, THE VOTER COULD BE TOLD THAT WHEN HE  
23 VOTES -- WHEN YOU DON'T VOTE IN A PLACE WHERE YOU COULD  
24 VOTE, THE MACHINE IS GOING TO PRINT NO SELECTION. YOU  
25 SHOULD LOOK OUT FOR THAT, RIGHT?

1       A.       I AM NOT AWARE OF VOTERS THAT WERE BEING TOLD  
2       THAT, BUT THEY COULD BE.

3       Q.       CLEARLY THEY COULD BE, RIGHT?

4       A.       YES, THEY COULD BE.

5       Q.       AND SO THEN IF A VOTER WAS CAREFULLY INSPECTING  
6       THEIR BALLOT, IT WOULD SEE, WAIT A MINUTE, THERE IS A  
7       BLANK SPACE THERE, CORRECT?

8       A.       THAT'S RIGHT.

9       Q.       OKAY. IN THE VERY SELECTIONS WE HAVE TALKED  
10      ABOUT IN WHICH THE EXPRESSVOTE XL MACHINE HAS BEEN USED,  
11      ARE YOU AWARE OF ANY EVIDENCE THAT AN EXPRESSVOTE XL  
12      MACHINE HAS EVER PRINTED ADDITIONAL SELECTIONS ON A  
13      BALLOT AFTER THE VOTER HAS OPTED TO CAST HIS OR HER  
14      VOTE?

15      A.       NO, I AM NOT.

16      Q.       THE THIRD THEORETICAL VULNERABILITY THAT YOU  
17      HAVE IDENTIFIED HERE, AS I UNDERSTAND IT, HAS TO DO WITH  
18      A SCANNING ISSUE, RIGHT?

19      A.       COULD YOU BE MORE --

20      Q.       SURE. AS UNDERSTAND IT -- WELL, LET'S START  
21      WITH THE DESIGN FEATURE THAT THIS THEORETICAL  
22      VULNERABILITY YOU THINK ARISES FROM IS THE FACT THAT THE  
23      MACHINE PRINTS THE BALLOT, PRINTS THE PAPER RECORD AND  
24      THEN SCANS IT JUST AS IT IS BEING PRESENTED, JUST BEFORE  
25      IT IS BEING PRESENTED TO THE VOTER FOR VERIFICATION,



1 RIGHT?

2 A. YES.

3 Q. AND IN FACT, THE WAY THE MACHINE IS DESIGNED,  
4 THAT SCANNED INFORMATION AT THAT POINT IS HELD IN  
5 TEMPORARY MEMORY, CORRECT?

6 A. THAT'S A QUESTION I THINK BETTER DIRECTED AT THE  
7 MANUFACTURER.

8 Q. IS THE ANSWER YOU DON'T KNOW?

9 A. THE INFORMATION -- THE ANSWER IS THAT THAT'S  
10 WHAT ES&S HAS ASSERTED.

11 Q. AND THEN IF THE VOTER DECIDES TO CAST HIS OR HER  
12 VOTE, THE BALLOT GETS DROPPED IN THE COLLECTION BIN AND  
13 THEN THE SCANNED INFORMATION FROM THE BARCODE GETS MOVED  
14 OVER TO PERMANENT RECORD -- TO PERMANENT MEMORY AND  
15 THAT'S THE TABULATION OF THE VOTE, IS THAT RIGHT?

16 A. YES.

17 Q. AND IF THE VOTER SAYS NO, THIS BALLOT IS NOT  
18 RIGHT, EITHER IT DOES NOT MATCH WHAT I THOUGHT I ENTERED  
19 OR I'VE DECIDED I DON'T ACTUALLY LIKE THESE SELECTIONS  
20 AND I OPT TO SPOIL MY BALLOT, THE PAPER RECORD GETS  
21 EJECTED, CORRECT?

22 A. YES.

23 Q. AND THEN THE MACHINE DOES NOT TABULATE THAT  
24 INFORMATION THAT WAS IN TEMPORARY MEMORY, IT GETS  
25 FLUSHED, CORRECT?

1 A. THAT'S HOW IT'S SUPPOSED TO WORK.

2 Q. WHEN YOU SAY IT WOULD BE FEASIBLE FOR MALWARE TO  
3 CAUSE PAPER RECORDS THAT HAVE BEEN REJECTED BY VOTERS TO  
4 BE TABULATED AS WELL AS THOSE THAT HAVE BEEN ACCEPTED BY  
5 VOTERS?

6 A. YES.

7 Q. SITTING HERE TODAY, DO YOU HAVE ANY EVIDENCE OR  
8 CAN YOU POINT TO ANY EVIDENCE THAT THAT'S ACTUALLY  
9 HAPPENED WITH ANY XL MACHINE THAT HAS BEEN USED IN ANY  
10 ELECTION?

11 A. NO, I CAN'T.

12 Q. AND IF THAT DID HAPPEN, THERE WOULD BE A  
13 MISMATCH BETWEEN THE MACHINE COUNT OF THE VOTE AND WHAT  
14 THE VOTE COUNT WOULD SHOW IF YOU MANUALLY INSPECTED THE  
15 BALLOTS, CORRECT?

16 A. WELL, NOT NECESSARILY. IT COULD JUST FEED THE  
17 BALLOT BACK INTO THE BALLOT BOX.

18 Q. YOU ARE AWARE THAT THERE ARE PROCEDURES  
19 GOVERNING SPOILED BALLOTS IN PENNSYLVANIA, CORRECT?

20 A. I AM.

21 Q. RIGHT. AND YOU ARE AWARE THAT THE PROCEDURE  
22 WHEN A VOTER OPTS TO SPOIL THE BALLOT IS NOT TO PLACE  
23 THAT SPOILED BALLOT IN THE BALLOT BOX, CORRECT?

24 A. I AM AWARE THAT'S THE PROCEDURE.

25 Q. SO IF WE ASSUME THAT THE SPOILED BALLOTS, THE

1 PAPER RECORDS, ARE NOT IN THE BALLOT BOX, THEN IF THE  
2 SCENARIO THAT YOU CONTEMPLATE WERE TO COME TO PASS,  
3 THERE WOULD BE A MISMATCH BETWEEN THE MACHINE TABULATED  
4 VOTES AND THE VOTES THAT WOULD BE TABULATED IF YOU WERE  
5 TO COUNT THE BALLOTS BY HAND?

6 A. I SEE. SO YOU MEAN IF THE MACHINE JUST EJECTED  
7 THE BALLOT TO HAVE IT PHYSICALLY SPOILED BUT MAINTAIN  
8 THE DIFFERENT DIGITAL RECORD, YES.

9 Q. I THINK WE ESTABLISHED AT THE OUTSET THAT YOU  
10 STARTED WORKING WITH PLAINTIFFS MORE OR LESS AT THE  
11 INCEPTION OF THIS LAWSUIT, CORRECT?

12 A. THAT'S RIGHT.

13 Q. YOU TESTIFIED AS AN EXPERT AT THE PRELIMINARY  
14 INJUNCTION HEARING WHICH WAS IN DECEMBER OF 2016, RIGHT?

15 A. I DID.

16 Q. AND PLAINTIFFS CONTINUE TO CONSULT WITH YOU AS  
17 THE LAWSUIT PROGRESSED?

18 A. PERIODICALLY, THAT'S RIGHT.

19 Q. AND WE ALREADY ESTABLISHED, I THINK, THAT  
20 PLAINTIFFS IN THEIR PLEADINGS WERE -- COMPLAINED ABOUT,  
21 AMONG OTHER THINGS, PAPERLESS DRE MACHINES IN  
22 PENNSYLVANIA, CORRECT?

23 A. YES.

24 Q. AND PLAINTIFFS WANTED A PAPER TRAIL, CORRECT?

25 A. YES, AMONG OTHER THINGS.

1 Q. THAT WAS THE TERM THEY ACTUALLY USED IN THEIR  
2 PLEADINGS REPEATEDLY, RIGHT?

3 A. YES.

4 Q. I WANT TO FAST FORWARD TO THE SETTLEMENT  
5 DISCUSSIONS IN THIS CASE.

6 YOU ARE AWARE THAT IN SEPTEMBER OF 2018  
7 THE COURT RULED ON DEFENDANT'S MOTION TO DISMISS  
8 PLAINTIFFS' AMENDED COMPLAINT, RIGHT?

9 A. YES.

10 Q. AND THE COURT DISMISSED SOME OF PLAINTIFFS'  
11 CLAIMS, BUT OTHERS WERE ALLOWED TO GO FORWARD?

12 A. I AM ACTUALLY NOT FAMILIAR WITH THE DETAILS.

13 Q. YOU ARE AWARE THAT THE LITIGATION DID NOT  
14 TERMINATE AT THAT POINT?

15 A. THAT'S RIGHT.

16 Q. AFTER THAT RULING, THE PARTIES STARTED TO  
17 DISCUSS THE POSSIBILITY OF SETTLEMENT IN EARNEST,  
18 CORRECT?

19 A. I WASN'T ACTUALLY PART OF THOSE DISCUSSIONS, BUT  
20 THAT'S -- I UNDERSTAND THAT THAT'S WHAT HAPPENED.

21 Q. SO THAT'S AN IMPORTANT POINT TO CLARIFY. SO YOU  
22 WERE NOT ACTUALLY PARTY TO THE DIRECT DISCUSSIONS  
23 BETWEEN THE PLAINTIFFS AND DEFENDANTS, IS THAT RIGHT?

24 A. I WAS NOT INVOLVED IN THE SETTLEMENT  
25 NEGOTIATION.

1 Q. BUT YOU DID WORK, AND AGAIN, I DON'T WANT  
2 SPECIFIC COMMUNICATIONS, BUT YOU DID WORK GENERALLY WITH  
3 PLAINTIFFS IN CONNECTION WITH THE SETTLEMENT  
4 DISCUSSIONS, CORRECT?

5 A. DID WORK GENERALLY WITH PLAINTIFFS? I SUPPOSE.

6 Q. ALL RIGHT. WELL, IN FACT, I THINK WE HAVE  
7 ALREADY REFERRED TO MS. UNGER'S SEPTEMBER 28TH E-MAIL IN  
8 WHICH THE DEFENDANT SENT OVER A NUMBER OF DIFFERENT  
9 DOCUMENTS PROVIDING INFORMATION ABOUT AN INITIATIVE THEN  
10 UNDERWAY BY THE DEPARTMENT OF STATE TO TRANSITION AWAY  
11 FROM PAPERLESS DRE'S AND TO PAPER RECORD --

12 VOTER-VERIFIABLE PAPER RECORD VOTING SYSTEMS. YOU HEARD  
13 TESTIMONY ABOUT THAT, RIGHT?

14 A. I HEARD THE TESTIMONY, YEAH.

15 Q. WERE YOU AWARE IN OCTOBER OF -- LET'S SAY AS OF  
16 OCTOBER 9, 2018 THAT THE DEPARTMENT HAD UNDERTAKEN AN  
17 INITIATIVE LIKE THE ONE WE HAVE HEARD TESTIMONY ABOUT?

18 A. I'M SORRY, TO REPLACE ITS VOTING MACHINES? YES.

19 Q. YES.

20 A. YES.

21 Q. AND I DON'T THINK MR. MAAZEL ASKED YOU. HAVE  
22 YOU ACTUALLY SEEN THAT SEPTEMBER 28TH E-MAIL FROM MS.  
23 UNGER WAS THAT FORWARDED TO YOU IN THAT  
24 SEPTEMBER/OCTOBER 2018 TIME PERIOD?

25 A. I'M SORRY, WHICH E-MAIL SPECIFICALLY ARE YOU

1 TALKING ABOUT?

2 Q. SURE. DO WE HAVE THAT HANDY? YES, EXHIBIT 14,  
3 JX 14.

4 THE COURT: WHAT IS THE NUMBER?

5 MR. WIYGUL: 14, YOUR HONOR.

6 BY MR. WIYGUL:

7 Q. THIS WAS THE E-MAIL THAT SUMMARIZED A NUMBER OF  
8 DIFFERENT DOCUMENTS DESCRIBING THE INITIATIVE AND  
9 ATTACHED THOSE DOCUMENTS. DID YOU SEE THAT E-MAIL  
10 AROUND THIS TIME?

11 A. I DON'T KNOW.

12 Q. YOU DON'T KNOW. OKAY.

13 WERE YOU IN THE COURTROOM FOR THE EARLIER  
14 TESTIMONY WHERE WE SAW THAT ON, I BELIEVE IT WAS,  
15 SEPTEMBER 19TH OF 2018, MR. MAAZEL HAD SENT AN E-MAIL TO  
16 DEFENDANTS THAT SPECIFICALLY ASKED FOR, I THINK IT WAS,  
17 A LIST OF THE MACHINES THAT PENNSYLVANIA WAS  
18 CONTEMPLATING FOR CERTIFICATION?

19 A. YES.

20 Q. WERE YOU AWARE OF THAT E-MAIL AT THE TIME?

21 A. NO.

22 MR. MAAZEL: IT WAS OCTOBER 9TH.

23 MR. WIYGUL: I AM TALKING ABOUT THE  
24 EARLIER SEPTEMBER 19TH E-MAIL. YOU CAN CALL IT UP IF  
25 YOU WANT, IN WHICH YOU REQUESTED A LIST -- THAT'S WHEN

1 THE OCTOBER 5TH PHONE CALL WAS SCHEDULED AND YOU  
2 REQUESTED A LIST OF --

3 MR. MAAZEL: SORRY. I WAS JUST TRYING TO  
4 UNDERSTAND --

5 THE COURT: I AM NOT SURE WHAT DOCUMENT  
6 YOU ARE TALKING ABOUT. DO YOU HAVE A NUMBER?

7 MR. WIYGUL: YES. I CAN GET ONE. I  
8 BELIEVE IT'S 11, YOUR HONOR.

9 THE COURT: DEFENDANTS' EXHIBIT?

10 MR. WIYGUL: YES.

11 BY MR. WIYGUL:

12 Q. I BELIEVE THIS IS ALREADY IN EVIDENCE. DO YOU  
13 SEE MR. MAAZEL SAYS: IF YOU GET US A LIST OF THE  
14 MACHINES UNDER CONSIDERATION IN THE NEXT COUPLE OF  
15 WEEKS, THAT WOULD BE VERY HELPFUL.

16 DO YOU SEE THAT?

17 A. I SEE THAT.

18 Q. WERE YOU AWARE OF THAT E-MAIL AROUND THE TIME IT  
19 WENT OUT?

20 A. NO.

21 Q. YOUR TESTIMONY WAS THAT YOU DID RECEIVE A COPY  
22 OF JX 12, HOWEVER, RIGHT, WHICH IS THE SEPTEMBER 21ST,  
23 2018 -- I WILL CALL IT THE VOTING SYSTEM STATUS REPORT.  
24 IT'S ACTUALLY TITLED PENNSYLVANIA VOTING SYSTEM AND  
25 ELECTRONIC POLL BOOK REPORT.

1 A. YES.

2 Q. YOU RECEIVED THAT ON OR AROUND SEPTEMBER 28TH,  
3 IS THAT RIGHT?

4 A. I SUPPOSE SO.

5 Q. WE KNOW IT WAS IN ADVANCE OF THE OCTOBER 9TH  
6 E-MAIL, RIGHT?

7 A. THAT'S RIGHT.

8 Q. THIS PURPORTS TO PROVIDE, IF WE LOOK AT THE TOP,  
9 A SNAPSHOT OF RECENT AND UPCOMING ACTIONS TAKEN BY THE  
10 DEPARTMENT OF STATE REGARDING THE EXAMINATION AND  
11 CERTIFICATION OF VOTING SYSTEMS AND THE APPROVAL OF  
12 ELECTRONIC POLL BOOKS. CORRECT?

13 A. YES.

14 Q. AND THEN YOU SEE THERE'S A -- THE NEXT SECTION  
15 UNDER CERTIFIED SYSTEMS AND SYSTEMS UNDER TEST TELLS THE  
16 READER THAT FOR MORE INFORMATION ABOUT THESE VOTING  
17 SYSTEMS, AMONG OTHER THINGS, THAT HAVE BEEN CERTIFIED OR  
18 APPROVED BY THE DEPARTMENT OF STATE, PLEASE REFER TO THE  
19 DEPARTMENT OF STATE'S VOTING SYSTEMS PAGE. DO YOU SEE  
20 THAT? IT'S ON PAGE 1 OF THE DOCUMENT IN THE MIDDLE.

21 A. YES.

22 Q. AND THEN THERE'S A HYPERLINK THERE, CORRECT?  
23 APPEARS TO BE A HYPERLINK.

24 A. APPEARS TO BE A HYPERLINK. I DON'T KNOW IF IT  
25 WORKS IN THE PDF OR NOT.



1 Q. DID YOU CLICK ON THAT HYPERLINK WHEN YOU GOT  
2 THIS DOCUMENT?

3 A. NO, I DID NOT.

4 Q. DID YOU EVER GO TO THE DEPARTMENT OF STATE'S  
5 WEBSITE AT ANY POINT BETWEEN WHEN YOU RECEIVED THIS  
6 DOCUMENT AND NOVEMBER 28, 2018, WHEN THE SETTLEMENT  
7 AGREEMENT WAS CERTIFIED RECEIVED -- SORRY -- WAS SIGNED  
8 TO SEE WHAT INFORMATION ABOUT VOTING MACHINES, AS  
9 DESCRIBED IN THIS DOCUMENT, YOU COULD FIND?

10 A. I DON'T RECALL.

11 Q. AND STARTING TOWARD THE BOTTOM OF THE PAGE  
12 THERE'S A LIST OF ELECTRONIC VOTING SYSTEMS, CORRECT?

13 A. YES.

14 Q. AND THE LIST INCLUDES THE NAME OF THE  
15 MANUFACTURER OF EACH SYSTEM AND THE MODEL NUMBER OF EACH  
16 SYSTEM; IS THAT RIGHT?

17 A. THAT'S RIGHT.

18 Q. AND IT PROVIDES THE STATUS OF PENNSYLVANIA'S  
19 TESTING OF EACH SYSTEM; IS THAT RIGHT?

20 A. YES, THERE IS SOME DESCRIPTION.

21 Q. AND MAYBE I MISHEARD YOU. I THOUGHT YOU SAID  
22 SOMETHING IN YOUR DIRECT TESTIMONY TO THE EFFECT THAT  
23 YOU HAD NEVER BEEN TOLD BY PLAINTIFFS ABOUT TESTING THAT  
24 HAD BEEN PERFORMED ON --

25 THE COURT: NEVER BEEN TOLD BY

1 DEFENDANTS?

2 MR. WIYGUL: YES.

3 THE COURT: YOU SAID PLAINTIFFS.

4 MR. WIYGUL: I'M SORRY. I MEANT --

5 THE COURT: MR. MAAZEL WAS ABOUT TO  
6 OBJECT ON PRIVILEGE GROUNDS.

7 MR. WIYGUL: THANK YOU, YOUR HONOR. YES.  
8 I KNEW I WOULD MAKE THAT SLIP AT SOME POINT.

9 BY MR. WIYGUL:

10 Q. I THOUGHT YOU HAD TESTIFIED THAT YOU HAD NEVER  
11 BEEN TOLD BY DEFENDANTS ABOUT TESTING THAT HAD BEEN  
12 CONDUCTED ON THE EVS 6021 SYSTEM.

13 A. I THOUGHT THE QUESTION WAS WHETHER THE TESTING  
14 HAD BEEN COMPLETED.

15 Q. OKAY. SO YOU WILL AGREE WITH ME THAT THE  
16 DEFENDANTS DID INFORM YOU THROUGH THIS DOCUMENT THAT  
17 THERE HAD BEEN TESTING -- WELL, AT THIS POINT, AT THE  
18 TIME OF THE DOCUMENT, SEPTEMBER 21ST, IT WAS  
19 CONTEMPLATED. BUT BY THE TIME YOU RECEIVED THE  
20 DOCUMENT, IT WAS ALREADY COMPLETED, CORRECT?

21 A. I HAD NO REASON TO KNOW WHETHER IT HAD BEEN  
22 COMPLETED OR NOT.

23 Q. YOU KNEW IT WAS SCHEDULED TO START ON  
24 SEPTEMBER 24TH, CORRECT?

25 THE COURT: IF YOU CLICK THE HYPERLINK OR

1 IF YOU BROUGHT UP THE DEPARTMENT OF STATE WEBSITE, WOULD  
2 YOU HAVE FOUND OUT WHETHER OR NOT THE TESTING WAS  
3 COMPLETED?

4 THE WITNESS: I DON'T KNOW. I DON'T KNOW  
5 WHETHER THAT WAS UPDATED AT THE TIME OR NOT.

6 THE COURT: YOU DON'T KNOW. YOU DON'T  
7 KNOW IF IT WAS UPDATED.

8 THE WITNESS: I DON'T KNOW HOW OFTEN THIS  
9 WAS UPDATED.

10 THE COURT: YOU HAVE HEARD TESTIMONY THAT  
11 IT'S UPDATED EVERY MONTH AROUND THE TIME THE EVENT  
12 HAPPENED. YOU HEARD THAT TESTIMONY, DIDN'T YOU, FROM  
13 MRS. BOOCKVAR OR WAS IT MR. --

14 MR. WIYGUL: I BELIEVE IT WAS, AMONG  
15 OTHER PEOPLE, MS. KOTULA YESTERDAY.

16 THE COURT: MS. KOTULA. YOU HEARD THAT  
17 TESTIMONY.

18 THE WITNESS: I DID.

19 THE COURT: SIR, YOU ARE A COMPUTER  
20 EXPERT DEALING WITH ELECTION COMPUTER SYSTEMS, CORRECT?

21 THE WITNESS: YES, YOUR HONOR.

22 THE COURT: AND YOU ARE TELLING ME UNDER  
23 OATH THAT YOU DON'T KNOW WHETHER OR NOT YOU CHECKED THE  
24 SITE OF THE STATE AGENCY WHOSE ACTIONS YOU ARE PASSING  
25 ON, YOU ARE OPINING ON? THAT'S WHAT YOU ARE TELLING ME

1 UNDER OATH?

2 THE WITNESS: YOUR HONOR, I HAVE THIS  
3 DOCUMENT THAT WAS DATED SEPTEMBER 21ST, AND THAT'S THE  
4 INFORMATION THAT I HAD WHEN --

5 THE COURT: I SEE.

6 THE WITNESS: -- WHEN -- AT THE TIME YOU  
7 ARE DESCRIBING --

8 THE COURT: OKAY. GO AHEAD.

9 THE WITNESS: -- WAS THE INFORMATION THE  
10 STATE PROVIDED.

11 THE COURT: GO ON, MR. WIYGUL.

12 BY MR. WIYGUL:

13 Q. SO THIS DOCUMENT PROVIDES NAME OF THE  
14 MANUFACTURER, MODEL NUMBER, STATUS OF TESTING, RIGHT?

15 A. YES.

16 Q. AND ONE OF THE SYSTEMS LISTED IS THE ES&S EVS  
17 6000/6021, CORRECT?

18 A. YES.

19 Q. THAT'S ACTUALLY A LISTING OF TWO VERSIONS OF THE  
20 SYSTEM, RIGHT?

21 A. THAT'S RIGHT.

22 Q. 6000 AND 6021?

23 A. THAT'S RIGHT.

24 Q. AND EACH OF THE VOTING SYSTEMS HERE INCLUDE A  
25 NUMBER OF DIFFERENT COMPONENTS. YOU'VE TESTIFIED TO

1 THAT, CORRECT?

2 A. THAT'S RIGHT.

3 Q. THE EXPRESSVOTE XL VOTING MACHINE IS A COMPONENT  
4 OF BOTH THE EVS 6000 AND THE 6021 VOTING SYSTEM, RIGHT?

5 A. IT IS.

6 Q. AND YOU KNEW THAT IN OCTOBER OF 2018, CORRECT?

7 A. I SUPPOSE I DID. MY RECOLLECTION IS ACTUALLY  
8 RATHER FUZZY, BUT I THINK IT'S REASONABLE.

9 Q. NOW, THERE IS NO DIFFERENCE IN THE HARDWARE  
10 BETWEEN THE EVS 6000 AND THE EVS 6021, RIGHT?

11 A. I DON'T THINK SO, NO. IT'S THE SOFTWARE.

12 Q. THE DIFFERENCE IS THE SOFTWARE, RIGHT?

13 A. YES.

14 Q. IF YOU WANTED TO GET INFORMATION ABOUT SPECIFIC  
15 COMPONENTS, INCLUDING EACH OF THE VOTING SYSTEMS THAT'S  
16 LISTED IN THIS DOCUMENT, YOU COULD VISIT THE  
17 MANUFACTURER'S WEBSITE, CORRECT?

18 A. YES.

19 Q. YOU COULD ALSO GO TO THE EAC'S WEBSITE, RIGHT?  
20 WE'VE HEARD TESTIMONY ABOUT THE EAC. LET ME BACK UP.

21 EAC, YOU HEARD THE TESTIMONY, IS A FEDERAL BODY THAT IS  
22 RESPONSIBLE FOR THE FEDERAL CERTIFICATION OF VOTING  
23 SYSTEMS, CORRECT?

24 A. THAT'S CORRECT.

25 Q. AND YOU ARE AWARE THAT UNDER PENNSYLVANIA LAW IN

1 ORDER FOR A VOTING SYSTEM TO BE CERTIFIED FOR USE IN  
2 PENNSYLVANIA, IT HAS TO BE CERTIFIED BOTH BY THE EAC AND  
3 BY PENNSYLVANIA, CORRECT?

4 A. YES, I AM AWARE OF THAT.

5 Q. AND THE EAC TESTS SYSTEMS FOR, AMONG OTHER  
6 THINGS, SECURITY, CORRECT?

7 A. YES.

8 Q. AND PENNSYLVANIA TESTS VOTING SYSTEMS FOR, AMONG  
9 OTHER THINGS, SECURITY, CORRECT?

10 A. IT DOES.

11 Q. SO FORGIVE ME. MY NEXT QUESTION, I DON'T THINK  
12 I ASKED IT YET, WAS ANOTHER PLACE YOU COULD GO IF YOU  
13 WANTED INFORMATION ABOUT THE SPECIFIC COMPONENTS OF EACH  
14 OF THESE VOTING SUITES OR SYSTEMS HERE, YOU COULD GO TO  
15 THE EAC'S WEBSITE, CORRECT?

16 A. YES. ALTHOUGH THE 6021 I DON'T THINK HAD BEEN  
17 CERTIFIED AT THE TIME. I AM NOT SURE WHAT INFORMATION  
18 WAS AVAILABLE.

19 Q. BUT THE 6000 HAD BEEN CERTIFIED, CORRECT?

20 A. HAD BEEN.

21 Q. AND YOU JUST TESTIFIED THAT THE HARDWARE  
22 COMPONENTS ARE THE SAME, CORRECT?

23 A. THE HARDWARE IS. THE SOFTWARE IS DIFFERENT.

24 Q. ONE OF THE HARDWARE COMPONENTS IS THE  
25 EXPRESSVOTE XL.

1 A. THAT'S TRUE.

2 Q. AND ALL OF THE DESIGN FEATURES THAT YOU  
3 IDENTIFIED EARLIER, THOSE HAVE TO DO WITH THE HARDWARE,  
4 RIGHT?

5 A. THEY HAVE TO DO WITH THE HARDWARE AND SOFTWARE.

6 Q. WELL, BUT SOFTWARE COMPONENT'S MALWARE COULD GET  
7 THEM TO DO THINGS THEY ARE NOT DESIGNED TO DO, RIGHT?

8 A. THAT'S CORRECT.

9 Q. BUT IT'S THE HARDWARE THAT YOU BELIEVE MAKES  
10 THAT POSSIBLE.

11 A. IT'S THE HARDWARE AND THE MODE OF OPERATION THAT  
12 MAKES IT POSSIBLE.

13 Q. DID YOU GO, AT THIS POINT IN TIME WHEN YOU  
14 RECEIVED THIS DOCUMENT, TO THE EAC'S WEBSITE TO SEE WHAT  
15 INFORMATION YOU COULD GLEAN ABOUT THE VARIOUS COMPONENTS  
16 OF THESE SYSTEMS?

17 A. I DON'T RECALL WHETHER I DID OR NOT.

18 Q. LET'S GO TO JX 8, PLEASE.

19 THE COURT: 8?

20 MR. WIYGUL: 8, YES. IT IS IN EVIDENCE.

21 BY MR. WIYGUL:

22 Q. I THINK THIS HAS BEEN STIPULATED, BUT I WILL  
23 JUST ASK YOU, THIS IS A COPY OF THE CERTIFICATE OF  
24 CONFORMANCE ISSUED BY THE EAC FOR THE ES&S EVS 6000  
25 SYSTEM, CORRECT?

1 A. IT APPEARS TO BE, YES.

2 Q. AND THIS IS DATED JULY 2ND, 2018, CORRECT?

3 A. YES.

4 Q. THAT WOULD BE SEVERAL MONTHS BEFORE OCTOBER 9TH.

5 A. YES.

6 Q. AND IF YOU LOOK PAST THE INITIAL CERTIFICATION  
7 PAGE, THERE IS THEN WHAT I WILL DESCRIBE AS A REPORT,  
8 BUT THERE IS A DOCUMENT THAT DESCRIBES THE  
9 CERTIFICATION, DESCRIBES THE SYSTEM IN SOME DETAIL,  
10 CORRECT?

11 A. YES.

12 Q. AND IF WE LOOK AT THAT PAGE, STILL THE  
13 CERTIFICATION, AND WE GO DOWN TOWARD THE BOTTOM, YOU SEE  
14 THERE'S A SYSTEM OVERVIEW SECTION?

15 A. YES.

16 Q. AND THEN THE DOCUMENT GOES ON TO LIST THE  
17 COMPONENTS OF THE SYSTEM, CORRECT?

18 A. YES.

19 Q. AND IT STARTS WITH THE SOFTWARE, WHICH IS CALLED  
20 ELECTIONWARE, IS THAT RIGHT?

21 A. YES.

22 Q. AND IF YOU TURN THE PAGE, THE VERY NEXT  
23 COMPONENT LISTED IS THE EXPRESSVOTE XL, CORRECT?

24 A. YES.

25 Q. AND IT'S DESCRIBED AS: A HYBRID PAPER-BASED



1 POLLING PLACE VOTING DEVICE THAT INCORPORATES THE  
2 PRINTING OF THE VOTER'S SELECTIONS AS A CAST VOTE RECORD  
3 AND TABULATION SCANNING INTO A SINGLE UNIT. DO YOU SEE  
4 THAT?

5 A. YES, I DO.

6 Q. AND THEN THERE'S SOMETHING CALLED THE  
7 EXPRESSTOUCH SYSTEM. DO YOU SEE THAT?

8 A. YES.

9 Q. AND THAT'S DESCRIBED AS A DRE, IS THAT RIGHT?

10 A. YES.

11 Q. AND PENNSYLVANIA DID NOT CERTIFY THE  
12 EXPRESSTOUCH SYSTEM, IS THAT RIGHT?

13 A. NO, IT DIDN'T CERTIFY IT.

14 Q. AND THEN THERE ARE TWO COMPONENTS DESCRIBED AS  
15 THE EXPRESSVOTE HARDWARE 1.0 AND THE EXPRESSVOTE  
16 HARDWARE 2.1. DO YOU SEE THAT?

17 A. YES.

18 Q. AND SO THOSE ARE DIFFERENT VERSIONS OF  
19 ESSENTIALLY THE SAME MACHINE, RIGHT?

20 A. YES.

21 Q. AND LIKE THE XL MACHINE, I THINK WE HAVE  
22 ESTABLISHED THIS ALREADY, BUT THE EXPRESSVOTE 2.1 IS  
23 ALSO DESCRIBED AS A HYBRID PAPER-BASED POLLING PLACE  
24 VOTING DEVICE, CORRECT?

25 A. YES.

1 Q. AND WE HAVE ESTABLISHED THEN, LIKE THE XL, IT  
2 CAN BE CONFIGURED TO BOTH PRINT THE BALLOT AND THEN SCAN  
3 AND TABULATE THE BALLOT, CORRECT?

4 A. YES. WELL, WAIT. WHAT DID YOU SAY, TO BOTH  
5 PRINT THE BALLOT OR TO SCAN AND TABULATE?

6 Q. NO. I SAID "AND." PRINT THE BALLOT, PRINT THE  
7 PAPER RECORD, AND THEN THE SAME MACHINE CAN ALSO SCAN  
8 AND TABULATE THE PAPER RECORD.

9 A. OH, I SEE. YES, YOU ARE REFERRING TO JUST ONE  
10 SINGLE CONFIGURATION.

11 Q. OF THE 2.1?

12 A. YES.

13 Q. AND THEN THE DOCUMENT GOES ON TO IDENTIFY THE  
14 OTHER COMPONENTS OF THE SYSTEM, CORRECT?

15 A. YES. I COUNT TEN OR A DOZEN COMPONENTS.

16 Q. DID YOU GO TO THE EAC'S WEBSITE AND VIEW THIS  
17 DOCUMENT IN OCTOBER OF 2018?

18 A. I DON'T RECALL. I'M SORRY.

19 Q. AND CAN WE GO BACK TO JX 57.

20 I JUST WANT TO BE CLEAR. I THINK YOU  
21 TESTIFIED TO THIS ALREADY. THIS IS THE EXAMPLE OF THE  
22 XL BALLOT, AND WE TALKED ABOUT THE FORMAT, AND YOU  
23 TESTIFIED YOU KNEW THIS WAS THE FORMAT OF THE BALLOT IN  
24 OCTOBER OF 2018, CORRECT, THE PAPER RECORD?

25 A. I AM NOT SURE THAT I DID AT THE TIME KNOW THAT

1 THIS WAS THE FORMAT OF THE BALLOT.

2 Q. YOU KNEW THAT THE BALLOT HAD BARCODES ON IT.

3 MR. MAAZEL: OBJECTION TO THE WORD

4 "BALLOT," YOUR HONOR.

5 MR. WIYGUL: PAPER RECORD. THANK YOU.

6 THE WITNESS: I KNEW THAT IT USED THE

7 SUMMARY STYLE PAPER RECORD.

8 BY MR. WIYGUL:

9 Q. SO YOU KNEW AT THE TIME THAT IT USED THE SUMMARY  
10 STYLE PAPER RECORD?

11 A. YES.

12 Q. THE XL MACHINE WE'RE TALKING ABOUT.

13 A. I'M NOT SURE THAT I -- YES, I DID KNOW THAT IT  
14 WAS A SUMMARY STYLE PAPER RECORD.

15 Q. OKAY. AND I THINK YOUR TESTIMONY EARLIER WAS  
16 YOU ALSO KNEW THAT IT HAD BARCODES PRINTED ON IT.

17 A. I THINK THAT'S CORRECT.

18 Q. AND YOU ALSO KNEW THAT THE WAY THAT THE MACHINE  
19 TABULATED THE VOTE WAS BY SCANNING THE BARCODE.

20 A. BY SCANNING THE BARCODE. I THINK THAT'S  
21 CORRECT.

22 Q. ALL OF THAT WAS KNOWN BY YOU IN OCTOBER OF 2018.

23 A. WELL, I AM TRYING TO THINK WHETHER THAT -- I  
24 DON'T KNOW FOR SURE WHETHER I KNEW THAT IT SCANNED THE  
25 BARCODE AND DIDN'T READ THE TEXT. I DON'T THINK I KNEW

1 THAT AT THE TIME, ACTUALLY.

2 Q. OKAY.

3 THE COURT: YOU WERE ADVISING.

4 THE WITNESS: BUT I MAY BE INCORRECT.

5 THE COURT: YOU WERE ADVISING -- I DON'T  
6 WANT TO KNOW THE SUBSTANCE OF IT, BUT YOU WERE ADVISING  
7 COUNSEL OF YOUR OPINIONS ALL THROUGH THIS PERIOD OR  
8 PERIODICALLY.

9 THE WITNESS: I WAS CONSULTED BY COUNSEL.

10 THE COURT: YOU SEEM TO HAVE KNOWN  
11 VIRTUALLY NOTHING ABOUT THE MACHINE ACCORDING TO YOUR  
12 PRESENT LACK OF RECOLLECTION. WHAT ON EARTH DID YOU  
13 TELL THEM? YOU DIDN'T KNOW IF THERE WAS A BARCODE. YOU  
14 ARE NOT SURE IF YOU KNEW THAT IT WAS A SUMMARY CARD.  
15 YOU DON'T REMEMBER IF YOU CONSULTED THE EAC SITE. YOU  
16 DON'T RECALL IF YOU CONSULTED THE DEPARTMENT OF STATE  
17 SITE. DID YOU CONSULT THE MANUFACTURER'S SITE OR DON'T  
18 YOU RECALL THAT EITHER?

19 THE WITNESS: I DON'T RECALL.

20 THE COURT: OKAY.

21 BY MR. WIYGUL:

22 Q. THAT WAS -- YOU SAID YOU'RE NOT -- MAY BE FUZZY  
23 ON THE DETAILS OF THE XL AT THE TIME. WE AGREE THAT --

24 A. WHAT I SAID WAS THAT I DON'T KNOW WHEN I LEARNED  
25 FOR CERTAIN THAT IT ONLY SCANS THE BARCODE. IT DOESN'T

1 CONSIDER THE TEXT.

2 Q. OKAY. WOULD YOU AGREE WITH ME THAT IT WOULD BE  
3 ODD IF THERE WERE A PAPER RECORD THAT PRINTED -- I DON'T  
4 KNOW HOW MANY BARCODES ARE UP THERE, AND DIDN'T SCAN THE  
5 BARCODE?

6 A. THERE ARE OTHER BMDS THAT PERFORM OCR AND  
7 ACTUALLY MAKE SURE THAT THE TEXT IS CORRECT.

8 Q. DO THEY ALSO INCLUDE 30 SOMETHING ODD DIFFERENT  
9 BARCODES ON THE PAPER RECORD?

10 A. THERE ARE REASONS YOU MIGHT WANT TO DO THAT  
11 ENGINEERING WISE FOR COMPATIBILITY.

12 Q. DO THE ONES YOU'RE AWARE OF INCLUDE ALSO 30  
13 DIFFERENT BARCODES ON THE PAPER RECORD?

14 A. THIS IS THE ONLY ONE I AM AWARE OF.

15 Q. THIS ONE SCANS THE BARCODES TO TABULATE THE  
16 VOTE.

17 A. YES, IT DOES.

18 Q. THE EXPRESSVOTE 2.1 MACHINE YOU TESTIFIED TO,  
19 THAT HAS THE SAME BALLOT FORMAT, CORRECT?

20 A. I BELIEVE SO, YES.

21 Q. THE EXPRESSVOTE 2.1 HAS BEEN IN USE FOR LONGER  
22 THAN THE XL, CORRECT?

23 A. I DON'T KNOW FOR SURE.

24 Q. YOU DON'T KNOW?

25 A. I DON'T KNOW FOR SURE. I BELIEVE -- I DON'T

1 KNOW THE RELATIVE DATES OF INTRODUCTION OF 2.1  
2 SPECIFICALLY AND THE XL.

3 Q. YOU CAN'T SAY WHETHER IT WAS INTRODUCED EARLIER.

4 A. THERE WERE EXPRESSVOTES INTRODUCED EARLIER.

5 Q. EXPRESSVOTES USING THIS FORMAT BALLOT?

6 A. YES, THAT'S RIGHT.

7 Q. DID YOU KNOW THAT THE EXPRESSVOTE -- AS OF  
8 OCTOBER 2018, CAN YOU SAY WITH MORE CERTAINTY THAT YOU  
9 KNEW THAT THE EXPRESSVOTE BALLOT NOT ONLY CONTAINED  
10 BARCODES BUT TABULATED THE VOTE BY SCANNING THE  
11 BARCODES?

12 MR. MAAZEL: OBJECTION TO COUNSEL'S  
13 REPEATED INSERTION OF THE WORD "BALLOT."

14 THE COURT: YOU HAVE A STANDING  
15 OBJECTION.

16 THE WITNESS: EXCUSE ME. DID I KNOW THAT  
17 THE EXPRESSVOTE COUNTED BY -- I AM SORRY. YOUR QUESTION  
18 WAS --

19 BY MR. WIYGUL:

20 Q. MY QUESTION WAS, YOU ACKNOWLEDGE THAT THE  
21 EXPRESSVOTE HAD BEEN IN USE LONGER THAN THE XL, CORRECT?

22 A. YES.

23 Q. AND YOU KNEW THAT?

24 A. YES.

25 Q. AND YOU KNEW THAT THE EXPRESSVOTE 2.1 HAD

1 BARCODES, OR THE EXPRESSVOTE MACHINE PAPER RECORDS HAD  
2 BARCODES, CORRECT?

3 A. YES.

4 Q. AND SO MY QUESTION IS: CAN YOU SAY WITH MORE  
5 CERTAINTY THAN YOU COULD SAY APPARENTLY ABOUT THE XL  
6 MACHINE, THAT YOU KNEW IN OCTOBER 2018 THAT THE  
7 EXPRESSVOTE, NOT XL, PAPER RECORDS WERE SCANNED AND THAT  
8 WAS THE METHOD BY WHICH THOSE VOTES WERE TABULATED? BY  
9 THE BARCODE.

10 A. THAT THEY WERE SCANNED BY THE BARCODE? I CAN'T  
11 SAY FOR ABSOLUTE CERTAINTY. I THINK IT'S A REASONABLE  
12 INFERENCE THOUGH, IF YOU WANT.

13 Q. BY THE WAY, YOU HAD ACTUALLY VISITED ES&S IN  
14 OMAHA, NEBRASKA IN JULY OF 2018, CORRECT?

15 A. I HAD. THEY INVITED ME.

16 Q. AND YOU WERE SHOWN ES&S VOTING SYSTEMS, CORRECT?

17 A. I WAS.

18 Q. THAT WAS THE WHOLE PURPOSE OF THE VISIT.

19 A. YES.

20 Q. YOU HAD AN OPPORTUNITY TO PUT YOUR HANDS ON THE  
21 MACHINES AND THEN ACTUALLY TRY THEM OUT YOURSELF,  
22 CORRECT?

23 A. I GOT TO TRY AN XL.

24 Q. YOU DID?

25 A. I DID.

1 Q. AND YOU PRINTED A BALLOT, PRINTED A PAPER  
2 RECORD?

3 A. I VOTED ON IT AND -- IN FRONT OF THEIR EXECUTIVE  
4 TEAM AND THE MACHINE -- THE MACHINE JUST WHISKED THE  
5 BALLOT AWAY WITHOUT SHOWING IT TO ME. IT DIDN'T GIVE ME  
6 ANY CHANCE TO REVIEW IT AT ALL. AND I WAS ASSURED BY  
7 THE EXECUTIVES THAT, NO, THAT WAS NOT HOW THEY INTENDED  
8 TO TEST IT. THAT WAS SOME MODE THAT WAS NOT REALLY  
9 GOING TO SEE WIDESPREAD USE. AND INSTEAD THEY TOLD ME  
10 THEY'D SHOW ME ANOTHER DEMONSTRATION LATER IN WHICH IT  
11 WOULD ACTUALLY GIVE ME MY BALLOT SO THAT I COULD REVIEW  
12 IT, JUST LIKE THE NON-XL VERSION DID. BUT THAT SECOND  
13 DEMONSTRATION NEVER HAPPENED.

14 Q. ALL RIGHT. I THINK YOUR ANSWER WAS YES, YOU  
15 TRIED THE XL MACHINE. AND YOU WERE THERE FOR ABOUT FOUR  
16 HOURS, CORRECT?

17 A. MAYBE LONGER THAN THAT.

18 Q. OKAY. WAS THE XL MACHINE THE ONLY MACHINE YOU  
19 TRIED?

20 A. NO. I HAD TRIED AN EXPRESSVOTE AS WELL.

21 Q. DO YOU SEE THE BALLOT THAT WAS PRINTED FROM THAT  
22 EXPRESSVOTE MACHINE?

23 A. I SAW THE BALLOT.

24 Q. IDENTICAL TO THE BALLOT PRINTED FROM THE  
25 EXPRESSVOTE XL, AS WE HAVE ESTABLISHED.



1 MR. MAAZEL: STANDING OBJECTION.

2 BY MR. WIYGUL:

3 Q. PAPER RECORD.

4 A. THE PAPER RECORD FROM -- DID I SEE -- I SAW THAT  
5 -- I KNEW THAT THEY WERE THE SAME FORMAT.

6 Q. AND WHAT HAPPENED IN THE DEMONSTRATION OF THE XL  
7 WHERE IT DIDN'T SHOW YOU THE BALLOT, THAT WAS THE  
8 CONFIGURATION THAT YOU HAVE ALREADY SAID IS FORBIDDEN IN  
9 PENNSYLVANIA, CORRECT?

10 A. THAT WAS THE CONFIGURATION THAT I OBJECTED TO  
11 AND THAT PENNSYLVANIA FORBADE.

12 Q. SO YOU REVIEWED THE VOTING SYSTEMS LISTED ON JX  
13 12. THAT'S THE VOTING SYSTEM STATUS REPORT, CORRECT?

14 A. I'M SORRY, JX 12?

15 Q. YES.

16 A. I REVIEWED THE LIST OF VOTING SYSTEMS.

17 Q. AND YOU PROVIDED FEEDBACK ON THEM, RIGHT?

18 A. I PROVIDED INITIAL -- MY INITIAL THOUGHTS ABOUT  
19 THE SUITES OF SYSTEMS ON THIS LIST.

20 Q. CAN WE GO TO JX 20, PLEASE.

21 FIRST, WE HAVE SEEN THIS BEFORE, RIGHT?

22 A. YES.

23 Q. AND YOU SAW THIS AROUND THE TIME IT WAS SENT?

24 A. NO. I DID NOT SEE THIS UNTIL WE WERE PREPARING  
25 FOR THE HEARING NOW.

1 Q. MR. MAAZEL'S FIRST LINE, HE SAYS: HERE ARE SOME  
2 FEEDBACK BEFORE OUR CALL THIS AFTERNOON. YOU DISAGREE  
3 WITH HIS CHARACTERIZATION?

4 A. WITH HIS -- IT IS SOME FEEDBACK, THAT'S RIGHT.

5 Q. AND YOU SAID YOU WERE PROVIDING -- IN YOUR  
6 TESTIMONY THIS MORNING, YOU SAID "QUICK INITIAL  
7 THOUGHTS"? WAS THAT THE PHRASE YOU USED?

8 A. THAT'S RIGHT.

9 Q. DO YOU SAY THAT ANYWHERE? WELL, FIRST OF ALL,  
10 LET'S JUST ESTABLISH THE E-MAIL. THE FIRST PARAGRAPH OF  
11 THIS E-MAIL IS FROM MR. MAAZEL, RIGHT? HE WROTE IT, AS  
12 FAR AS YOU KNOW?

13 A. YES, AS FAR AS I KNOW.

14 Q. AND THEN HE SAYS: IN ADDITION THE FOLLOWING IS  
15 FROM ALEX HALDERMAN. DO YOU SEE THAT?

16 A. YES.

17 Q. AND THEN IS IT TRUE THAT EVERYTHING BETWEEN "THE  
18 FOLLOWING IS FROM ALEX HALDERMAN" AND THE "TALK SOON"  
19 VALIDATION AT THE END, THAT'S SOMETHING THAT YOU WROTE,  
20 CORRECT?

21 A. THAT'S COPIED FROM SOMETHING I WROTE.

22 Q. EVERY WORD OF THAT, I JUST WANT TO BE CLEAR, IS  
23 WHAT YOU WROTE?

24 A. I BELIEVE SO.

25 THE COURT: WHY DON'T YOU LOOK AT IT

1 CAREFULLY AND TELL US WHETHER YOU CAN ACTUALLY GIVE US A  
2 YES OR NO ANSWER.

3 THE WITNESS: YES. AND JUST TO BE CLEAR,  
4 MY UNCERTAINTY IS THAT THIS IS SOMETHING THAT WAS COPIED  
5 FROM SOMETHING I WROTE.

6 THE COURT: IT'S CUT AND PASTED FROM  
7 SOMETHING YOU WROTE, CORRECT?

8 THE WITNESS: CUT AND PASTED FROM  
9 SOMETHING I WROTE A LONG TIME AGO, AND I ASSUME WITHOUT  
10 MODIFICATION.

11 THE COURT: WELL, IS IT MODIFIED?

12 THE WITNESS: I DON'T KNOW BECAUSE I  
13 DON'T HAVE WHAT I WROTE TWO YEARS AGO.

14 THE COURT: IS EVERYTHING YOU SAY HERE  
15 TRUE AND CORRECT? EVERYTHING THAT IS HERE YOU SAID,  
16 CORRECT?

17 THE WITNESS: I BELIEVE SO, YES.

18 MR. MAAZEL: YOUR HONOR, JUST TO  
19 SHORT-CIRCUIT, WE CAN STIPULATE THAT EVERYTHING FROM "I  
20 REVIEWED THE VOTING SYSTEMS" TO BELOW THE TOP -- ABOVE  
21 THE TOP STAVE IS A CUT AND PASTE.

22 THE COURT: SO DR. HALDERMAN WROTE IT.

23 MR. MAAZEL: THAT'S CORRECT.

24 THE WITNESS: OKAY, IF YOU SAY SO.

25 BY MR. WIYGUL:

1 Q. WITH THAT STIPULATION -- NOWHERE IN THESE  
2 PARAGRAPHS THAT YOU WROTE DO YOU SAY THAT THESE ARE JUST  
3 YOUR QUICK INITIAL THOUGHTS, CORRECT?

4 A. THAT'S NOT IN THOSE PARAGRAPHS, NO.

5 Q. YOU DON'T SAY ANYTHING REMOTELY LIKE THAT,  
6 CORRECT?

7 A. NO.

8 Q. ALL RIGHT. AND IN FACT --

9 A. WELL, I SAY SOMETHING LIKE THAT.

10 Q. DON'T YOU ACTUALLY SAY: I REVIEWED THE VOTING  
11 SYSTEMS THAT PENNSYLVANIA IS CONSIDERING AND I DON'T  
12 DISAPPROVE OF ANY OF THEM IN THEIR ENTIRETY? RIGHT?

13 A. THAT'S RIGHT.

14 Q. THE NEXT SENTENCE IS: ALL OF THEM THAT USE  
15 PAPER BALLOTS CAN BE USED WITH REASONABLE SECURITY AND  
16 IMPLEMENTED IN VOTER-VERIFIED PAPER BALLOTS AND ROBUST  
17 MANUAL AUDITS. DO YOU SEE THAT?

18 A. YES.

19 Q. THERE IS NO ASTERISK ATTACHED TO THAT SENTENCE,  
20 CORRECT?

21 A. "CAN BE USED" ARE THE IMPORTANT WORDS THERE,  
22 BUT, YES.

23 Q. ALL OF THEM CAN BE USED WITH REASONABLE  
24 SECURITY, CORRECT?

25 A. THERE IS A WAY TO USE ALL OF THEM WITH

1 REASONABLE SECURITY.

2 Q. YOU DID NOT SAY, SIR, WELL, SUBJECT TO MORE  
3 EVALUATION AND TESTING INFORMATION, AND MIGHT BE THE  
4 CASE THAT ALL OF THEM CAN BE USED WITH REASONABLE  
5 SECURITY. YOU SAID: ALL OF THEM CAN BE USED WITH  
6 REASONABLE SECURITY, IMPLEMENTED AND VERIFIED PAPER  
7 BALLOTS AND ROBUST MANUAL AUDITS.

8 A. WHAT I MEANT, IF I MAY SAY, IS THAT AT A HIGH  
9 LEVEL THESE ARE SYSTEMS THAT WILL PRODUCE A BALLOT THAT  
10 IS VERIFIED BY THE VOTER, THAT CAN THEN BE INDEPENDENTLY  
11 SCANNED OR THEY CAN SCAN A HANDMARKED BALLOT, AND THAT  
12 CAN BE ROBUSTLY AUDITED. AND THAT IS THE CONFIGURATION  
13 THAT IS NOT ON -- IT'S NOT JUST MY VIEW -- CONSENSUS  
14 VIEW OF THE NATIONAL ACADEMIES, IS REQUIRED FOR A SYSTEM  
15 TO BE SECURE THAT CAN MAKE A SYSTEM SECURE. THAT'S THE  
16 POINT.

17 Q. THAT MAY BE WHAT YOU HAD IN YOUR HEAD, BUT NONE  
18 OF THAT APPEARS ON THE PAGE HERE, CORRECT?

19 A. I THINK THAT'S WHAT I WAS TRYING TO COMMUNICATE  
20 IN THAT SECOND SENTENCE BUT --

21 Q. OKAY. LET'S GO BACK UP TO THE FIRST PARAGRAPH  
22 BY MR. MAAZEL. HE SAYS AFTER THAT FIRST SENTENCE WE  
23 SAW: THE LIST OF MODELS IN THE PA VOTING SYSTEM AND  
24 ELECTRONIC POLL BOOK REPORT INCLUDES A SUITE OF ELECTION  
25 SYSTEMS. AND HE POINTS OUT THAT SOME OF THE COMPONENTS

1 DON'T USE PAPER BALLOTS, CORRECT?

2 A. YES.

3 Q. AND HE GIVES ONE EXAMPLE OF SUCH A COMPONENT AND  
4 THAT IS THE HART INTERCIVIC VERITY VOTING, VERITY TOUCH,  
5 CORRECT?

6 A. YES.

7 Q. AND HE DESCRIBES THAT AS A PAPERLESS DRE SYSTEM,  
8 CORRECT?

9 A. YES.

10 Q. AND IN FACT PENNSYLVANIA DID NOT CERTIFY THE  
11 VERITY TOUCH, IS THAT RIGHT?

12 A. YES.

13 Q. IT DIDN'T EVEN CONSIDER IT FOR EXAMINATION.

14 A. THAT'S RIGHT.

15 Q. AND DEFENDANTS MADE CLEAR TO PLAINTIFFS DURING  
16 THE SETTLEMENT NEGOTIATIONS THAT UNDER THE DEPARTMENT'S  
17 INITIATIVE TO TRANSITION TO VOTER-VERIFIABLE PAPER  
18 RECORD VOTING SYSTEMS, THE DEPARTMENT WOULD NOT BE  
19 CERTIFYING ANY DRE'S. CORRECT?

20 MR. MAAZEL: OBJECTION, YOUR HONOR.  
21 THERE IS NO WAY FOR HIM TO KNOW WHAT HAPPENED IN THE  
22 NEGOTIATIONS.

23 THE COURT: IF HE KNOWS.

24 THE WITNESS: I DON'T KNOW.

25 BY MR. WIYGUL:

1 Q. OKAY. AND THEN WE ESTABLISHED MR. MAAZEL SAYS  
2 -- INTRODUCES THE REST OF THE E-MAIL, WHICH COMES FROM  
3 YOU, RIGHT?

4 A. YES.

5 Q. AND WE TALKED ABOUT THE FIRST SENTENCE. YOU  
6 REVIEWED THE VOTING SYSTEMS THAT PA IS CONSIDERING. YOU  
7 WERE REFERRING THERE TO THE VOTING SYSTEMS LISTED IN THE  
8 SEPTEMBER 21ST DOCUMENT, JX 12, THAT WE LOOKED AT  
9 EARLIER, CORRECT?

10 A. TO THE HIGH LEVEL SUITES, THAT'S RIGHT.

11 Q. AND YOU SAY: I DON'T DISAPPROVE OF ANY OF THEM  
12 IN THEIR ENTIRETY. ALL OF THEM THAT USE PAPER BALLOTS  
13 CAN BE USED WITH REASONABLE SECURITY IF IMPLEMENTED WITH  
14 VOTER-VERIFIED PAPER BALLOTS AND ROBUST MANUAL AUDITS,  
15 RIGHT?

16 A. YES.

17 Q. SO ONE THING THAT IS CLEAR FROM THIS E-MAIL IS  
18 THAT IF A VOTING SYSTEM DOES NOT USE A PAPER BALLOT,  
19 IT'S UNACCEPTABLE TO PLAINTIFFS, CORRECT?

20 MR. MAAZEL: OBJECTION, YOUR HONOR.

21 THE COURT: OVERRULED.

22 THE WITNESS: IS THAT CLEAR FROM THIS  
23 E-MAIL? I'M NOT SURE.

24 BY MR. WIYGUL:

25 Q. YOU DON'T KNOW?

1                   LET ME ASK THE QUESTION ANOTHER WAY. ARE  
2           YOU TRYING TO COMMUNICATE THAT VOTING SYSTEMS THAT DON'T  
3           USE PAPER BALLOTS ARE ACCEPTABLE TO YOU, THAT THEY  
4           SHOULD BE CERTIFIED IN PENNSYLVANIA?

5           A.           SO PLAINTIFFS -- IT'S CLEAR FROM THIS THAT THERE  
6           HAVE TO BE PAPER BALLOTS. IS THAT WHAT YOU ARE LOOKING  
7           FOR?

8           Q.           YES. IT IS CLEAR FROM THIS THAT PLAINTIFFS'  
9           POSITION IS THAT THERE HAVE TO BE PAPER BALLOTS IN ORDER  
10          FOR A VOTING SYSTEM TO BE ACCEPTABLE TO PLAINTIFFS,  
11          CORRECT?

12          A.           YES. YES.

13          Q.           OKAY. AND AGAIN, THE E-MAIL PROVIDES ONE  
14          EXAMPLE OF A VOTING SYSTEM THAT DOES NOT USE PAPER  
15          BALLOTS, AND THAT'S A PAPERLESS DRE SYSTEM, CORRECT?

16                   MR. MAAZEL: OBJECTION, ASKED AND  
17          ANSWERED.

18                   THE COURT: OVERRULED.

19                   THE WITNESS: YES.

20          BY MR. WIYGUL:

21          Q.           IN THE NEXT PARAGRAPH OF YOUR PORTION OF THE  
22          E-MAIL YOU SAY: THAT SAID, THERE ARE FEATURES OF EACH  
23          OF THESE VOTING SYSTEMS -- THE "THAT SAID" IS "EVEN  
24          THOUGH WE DON'T DISAPPROVE OF ANY OF THEM IN THEIR  
25          ENTIRETY" -- NONETHELESS THERE ARE FEATURES OF EACH OF



1       THESE VOTING SYSTEMS THAT CAN RENDER THEM UNSAFE IF  
2       ACTIVATED.

3                       DID I READ THAT RIGHT?

4       A.           YES.

5       Q.           THE NEXT SENTENCE SAYS:   PERHAPS YOU CAN URGE  
6       PENNSYLVANIA TO CERTIFY THEM WITH RESTRICTIONS THAT  
7       PROHIBIT THESE DANGEROUS FUNCTIONS.

8       A.           YES.

9       Q.           WHO IS THE "YOU" IN THAT LAST SENTENCE.   IS THAT  
10      MR. MAAZEL?

11      A.           YES.

12      Q.           SO YOU WERE SUGGESTING TO MR. MAAZEL THAT HE  
13      COULD URGE PENNSYLVANIA TO CERTIFY THESE SYSTEMS WITH A  
14      RESTRICTION, CORRECT?

15      A.           THAT IF THEY WERE TO CERTIFY THEM, THESE  
16      FEATURES SHOULD BE RESTRICTED.   THAT'S WHAT I MEANT BY  
17      THAT.

18      Q.           YOU SAID:   PERHAPS YOU CAN URGE PENNSYLVANIA TO  
19      CERTIFY THEM, CORRECT?

20      A.           WELL, TO INCLUDE RESTRICTIONS OF THESE FEATURES.

21      Q.           YOU DON'T SAY YOU SHOULD TELL PENNSYLVANIA NOT  
22      TO CERTIFY THESE SYSTEMS.

23      A.           I DON'T SAY THAT.

24      Q.           THEN THERE'S A COLON AND YOU GO ON TO LIST THE  
25      SPECIFIC DANGEROUS FUNCTIONS AND THE RESTRICTIONS THAT

1       YOU ARE REFERRING TO, CORRECT?

2       A.       YES. I LIST SOME OF MY -- SOME CONCERNS. THIS  
3       WAS NEVER MEANT TO BE AN ALL-INCLUSIVE LIST.

4       Q.       DO YOU SAY SOME CONCERNS, SIR, OR DO YOU SAY YOU  
5       CAN URGE -- PERHAPS YOU CAN URGE PA TO CERTIFY THEM WITH  
6       RESTRICTIONS THAT PROHIBIT THESE DANGEROUS FUNCTIONS,  
7       COLON?

8       A.       I DON'T SAY THAT ON THE SCREEN HERE, NO.

9       Q.       AND THEN YOU GO ON TO LIST THE DANGEROUS  
10      FUNCTIONS YOU'RE REFERRING TO. YOU SAY NOW SOME OF  
11      THEM. BUT WE CAN AGREE YOU LIST DANGEROUS FUNCTIONS,  
12      CORRECT?

13      A.       YES.

14      Q.       LET'S LOOK AT THE PARAGRAPH WHERE YOU TALK ABOUT  
15      THE ES&S EXPRESSVOTE MACHINES. CAN YOU BLOW THAT ONE  
16      UP, JUST THAT PARAGRAPH UP, PLEASE.

17                   FIRST OF ALL, THIS IS THE ENTIRETY OF  
18      WHAT YOU SAY ABOUT THE ES&S SYSTEM IN THIS E-MAIL,  
19      CORRECT?

20      A.       YES.

21      Q.       YOU SAY: THE ES&S EXPRESSVOTE MACHINES CAN WORK  
22      AS TRADITIONAL BALLOT-MARKING DEVICES, BUT IT'S ALSO  
23      POSSIBLE TO CONFIGURE THEM IN WAYS THAT DEFEAT THE  
24      PURPOSE OF THE PAPER TRAIL. I HAVE SEEN THEM SET UP TO  
25      PRINT THE BALLOT BUT NOT SHOW IT TO THE VOTE AT ALL,

1 RIGHT?

2 A. YES, IT SHOULD.

3 Q. -- AT ALL, THE MACHINE JUST SCANS IT INTERNALLY  
4 AND STORES IT IN A BALLOT BOX. THIS MEANS THERE IS  
5 PAPER, BUT IT'S NOT VOTER-VERIFIED, SO IT'S OF NO USE IN  
6 AN AUDIT. ANDREW -- AND IS IT APPEL OR APPEL?

7 A. APPEL.

8 Q. ANDREW APPEL RECENTLY WROTE THAT ANOTHER  
9 CONFIGURATION OF THE EXPRESSVOTE IN WHICH IT ASKS VOTERS  
10 WHETHER THEY WANT TO VERIFY THEIR BALLOTS BEFORE  
11 PRINTING THEM AND ONLY ALLOWS THE VOTER TO INSPECT THE  
12 PAPER IF THEY SAY YES. AND ANDREW EXPLAINED AND YOU  
13 PROVIDED A LINK TO A WEB PAGE, CORRECT?

14 A. YES.

15 Q. AND THAT'S WHERE MR. APPEL EXPLAINS WHAT YOU ARE  
16 DESCRIBING, CORRECT?

17 A. YES, THAT'S RIGHT.

18 Q. THIS ALSO DEFEATS THE VALUE OF AN AUDIT SINCE  
19 MALWARE COULD BE PROGRAMMED CHEAT ONLY IF THE VOTER OPTS  
20 NOT TO SEE THE PAPER. PENNSYLVANIA SHOULD REQUIRE THE  
21 MACHINES TO BE CONFIGURED SO THAT EVERY VOTER HAS AN  
22 OPPORTUNITY TO SEE THEIR COMPLETED BALLOT AFTER IT'S  
23 PRINTED.

24 A. THAT'S RIGHT.

25 Q. WE'VE ESTABLISHED THAT PENNSYLVANIA DID IN FACT

1 IMPLEMENT THAT REQUIREMENT, CORRECT?

2 A. THAT'S RIGHT.

3 Q. AND WHEN YOU REFERRED TO THE EXPRESSVOTE  
4 MACHINES AT THE TOP, YOU WERE REFERRING TO THE  
5 EXPRESSVOTE XL AND THE OTHER EXPRESSVOTE MACHINE, A  
6 NON-XL THAT WE TALKED ABOUT WHEN WE WERE LOOKING AT THE  
7 EAC CERTIFICATION EARLIER, CORRECT?

8 A. I THINK THAT'S PROBABLY RIGHT. BUT I SAY  
9 EXPRESSVOTE AND SOME OF THESE CONCERNS APPLY TO BOTH.

10 Q. WELL, YOU WOULD AGREE WITH ME THAT CERTAINLY IT  
11 WOULD HAVE BEEN REASONABLE FROM WHERE YOU SIT FOR  
12 DEFENDANTS TO CONCLUDE THAT YOU WERE REFERRING TO THE XL  
13 MACHINE, IS THAT RIGHT?

14 A. I DON'T KNOW. I DON'T KNOW WHETHER THAT WOULD  
15 BE REASONABLE OR NOT. I DON'T SAY THE XL.

16 Q. LET'S SEE IF WE CAN FURTHER ILLUMINATE THAT  
17 QUESTION. CAN YOU LOOK AT JX 21, PLEASE.

18 THIS IS ALREADY IN EVIDENCE. THIS IS THE  
19 -- I WILL CALL IT AN ARTICLE. BUT IF YOU CLICK ON THAT  
20 LINK THAT YOU PROVIDED, THIS IS WHAT -- THE WEB PAGE YOU  
21 WOULD BE TAKEN TO AND SEE THIS ARTICLE?

22 A. THAT'S RIGHT.

23 Q. AND THIS IS BY MR. APPEL?

24 A. BY DR. APPEL.

25 Q. DR. APPEL. HE IS A PRINCETON PROFESSOR, IS THAT

1 RIGHT?

2 A. THAT'S RIGHT. HE IS A PROFESSOR OF COMPUTER  
3 SCIENCE AT PRINCETON.

4 Q. AND I ASSUME, BASED ON WHAT YOU WROTE IN THE  
5 E-MAIL, YOU WERE FAMILIAR WITH HIM AT THE TIME?

6 A. YES.

7 Q. YOU CONSIDER HIM AN AUTHORITY IN THE FIELD OF  
8 VOTING SYSTEM SECURITY?

9 A. I DO.

10 Q. DID YOU AT THE TIME?

11 A. YES.

12 Q. DID YOU FOLLOW HIS WORK?

13 A. AT LEAST PERIODICALLY.

14 Q. YOU CONSIDER HIM A PEER AS AN ACADEMICIAN?

15 A. YES.

16 Q. WHAT IS THIS FREEDOM -- WELL, FIRST OF ALL, THIS  
17 IS -- THIS APPEARS ON A WEBSITE CALLED FREEDOM TO  
18 TINKER. IS THAT RIGHT?

19 A. YES.

20 Q. WHAT IS THIS WEBSITE?

21 A. IT'S A BLOG MAINTAINED BY THE PRINCETON CENTER  
22 FOR INFORMATION TECHNOLOGY POLICY.

23 Q. AND WHO -- I THINK THE RIGHT VERB TO USE IN THE  
24 BLOG IS -- POSTS?

25 A. I GUESS SO.

1 Q. I WILL DEFER TO YOU ON THAT ONE CLEARLY, BUT WHO  
2 POSTS ON THIS BLOG?

3 A. IT'S MAINLY FACULTY AND OTHER ACADEMICS AT  
4 PRINCETON.

5 Q. SO MORE PEER ACADEMICIANS OF YOURS?

6 A. YES.

7 Q. IN FACT, YOU'VE POSTED ARTICLES ON THIS WEBSITE,  
8 RIGHT?

9 A. I HAVE, YES.

10 Q. AND THIS IS A WEBSITE THAT YOU MONITOR?

11 A. PERIODICALLY. NOT -- IT DOES NOT GET PUSHED  
12 INTO MY IN-BOX OR ANYTHING.

13 Q. YOU OBVIOUSLY SAW IT ON THIS PARTICULAR  
14 OCCASION.

15 A. I HAD, YES.

16 Q. DO YOU RECALL HOW YOU CAME UPON THIS ARTICLE?

17 A. NO, I DON'T.

18 Q. LET'S LOOK AT THE FIFTH PARAGRAPH, AND THE TEXT  
19 IS QUITE SMALL, SO LET'S BLOW IT UP. THAT'S GREAT.

20 AND JUST TO BE CLEAR, THIS IS -- WHAT IS  
21 DESCRIBED IN THIS ARTICLE IS WHAT -- IS THE ISSUE THAT  
22 YOU WERE SUMMARIZING IN THAT PARAGRAPH THAT WE LOOKED AT  
23 FROM THE OCTOBER 9TH E-MAIL, CORRECT?

24 A. SORRY. I AM JUST TRYING TO READ IT, AND IT IS  
25 QUITE SMALL IN BOTH VERSIONS.

1 Q. MAYBE WE CAN START WITH THE TITLE, RIGHT? IT'S  
2 SERIOUS DESIGN FLAW.

3 A. YES.

4 Q. THIS IS "PERMISSION TO CHEAT." THIS IS THE --  
5 THIS IS THE LONG FORM VERSION OF WHAT YOU WERE  
6 SUMMARIZING IN YOUR -- IN THE OCTOBER E-MAIL, CORRECT?

7 A. THAT'S RIGHT.

8 Q. OKAY. AND THAT'S WHY YOU LINKED TO THIS  
9 ARTICLE, CORRECT? FOR MORE DETAILS SEE HERE.

10 A. YES.

11 Q. SO IN THIS PARAGRAPH, IT SAYS -- I AM STARTING  
12 IN THE MIDDLE HERE -- ES&S HAS A LINE OF VOTING SYSTEMS  
13 CALLED EXPRESSVOTE. DO YOU SEE THAT?

14 A. I AM SORRY. CAN YOU --

15 Q. SURE. THANK YOU.

16 A. THANK YOU VERY MUCH. YES.

17 Q. ALL RIGHT. AND THE NEXT SENTENCE SAYS: SOME OF  
18 THESE ARE OPTICAL SCANNERS WHICH DR. APPEL THINKS ARE  
19 FINE, AND OTHERS ARE COMBINATION MACHINES, BASICALLY A  
20 BALLOT-MARKING DEVICE AND AN OPTICAL SCANNER ALL ROLLED  
21 INTO ONE. DO YOU SEE THAT?

22 A. YES.

23 Q. WHAT DR. APPEL IS CALLING A COMBINATION MACHINE,  
24 WE SAW THAT REFERRED TO IN THE EAC REPORT AS A HYBRID  
25 MACHINE, CORRECT?

1 A. IN THE EAC REPORT AS A HYBRID MACHINE?

2 Q. IN THE EAC CERTIFICATION REPORT FOR THE EVS  
3 6000.

4 A. I AM NOT SURE WE POINTED THAT OUT. I WILL TAKE  
5 YOUR WORD FOR IT THAT IT'S IN THERE.

6 Q. DO YOU UNDERSTAND THOSE TERMS TO BE REFERRING TO  
7 THE SAME THING?

8 A. YES.

9 Q. AND THAT IS A FACT THAT THERE ARE TWO FUNCTIONS  
10 IN THIS ONE MACHINE, THERE'S THE BALLOT-MARKING FUNCTION  
11 AND THEN THERE'S THE SCANNING/TABULATION FUNCTION?

12 A. YES.

13 Q. OKAY. ALL RIGHT. LET'S GO TO -- AND THEN --  
14 SORRY. JUST TO BE CLEAR, THIS ARTICLE DESCRIBES THE  
15 ISSUE THAT YOU HIGHLIGHT IN YOUR E-MAIL, WHICH, TO BE  
16 SPECIFIC, IS THAT THE MACHINES CAN BE CONFIGURED IN A  
17 WAY THAT ALLOWS THE VOTER TO OPT OUT OF HAVING THE  
18 OPPORTUNITY TO REVIEW THEIR BALLOT, THE PAPER RECORD,  
19 BEFORE IT'S CAST, CORRECT?

20 A. BEFORE IT'S EVEN PRINTED, I BELIEVE.

21 Q. OKAY. BUT -- AND SO IF CONFIGURED THAT WAY,  
22 THEY CAN SAY BASICALLY I AM JUST GOING TO INPUT MY  
23 SELECTIONS ON THE SCREEN. I KNOW YOU ARE GOING TO PRINT  
24 A BALLOT. I DON'T CARE. I DON'T WANT TO SEE IT. I  
25 WON'T SEE IT. JUST CAST THE VOTE AS I ELECTRONICALLY --



1 RIGHT?

2 A. THAT'S WHAT IT IS REFERRING TO.

3 Q. AND THAT'S A PROBLEM IN PARTICULAR THAT ARISES  
4 FROM CERTAIN CONFIGURATIONS OF THESE HYBRID MACHINES OR  
5 COMBINATION MACHINES, CORRECT?

6 A. ONLY OF CERTAIN HYBRID OR COMBINATION MACHINES.

7 Q. CAN WE LOOK AT THE LAST PARAGRAPH ON THE FIRST  
8 PAGE.

9 JOHNSON COUNTY SHOULD NOT HAVE BOUGHT  
10 THESE MACHINES. IF THEY ARE GOING TO USE THEM, THEY  
11 MUST INSIST THAT ES&S DISABLE THIS "PERMISSION TO CHEAT"  
12 FEATURE.

13 SO JUST TO BE CLEAR, "PERMISSION TO  
14 CHEAT" IS DR. APPEL'S SHORTHAND FOR THE OPT-OUT FEATURE  
15 WE JUST TALKED ABOUT.

16 A. THAT'S RIGHT, YES.

17 Q. SO ARE YOU REFERRING -- ARE YOU AWARE OF JOHNSON  
18 COUNTY PURCHASING CERTAIN ES&S MACHINES?

19 A. FROM -- ON THE BASIS OF THIS BLOG POST.

20 Q. AND THOSE WERE EXPRESSVOTE 2.1 MACHINES,  
21 CORRECT?

22 A. I DON'T KNOW.

23 Q. YOU DON'T KNOW?

24 A. NO, I DON'T KNOW WHICH ONE.

25 Q. OKAY. ARE YOU AWARE THAT THERE'S A LINK IN THIS

1 ARTICLE TOWARD THE, SAY, TWO-THIRDS OF THE WAY DOWN, TO  
2 A VIDEO?

3 A. I AM AWARE THAT THERE IS A LINK. I NEVER  
4 FOLLOWED IT.

5 Q. YOU NEVER FOLLOWED IT?

6 A. THAT'S RIGHT.

7 Q. AND IF I WERE TO TELL YOU THAT IF YOU CLICK ON  
8 THIS LINK, IT SHOWS YOU A VIDEO OF WHAT APPEARS TO BE  
9 POLL WORKERS OR VOTING OFFICIALS FROM JOHNSON COUNTY  
10 DEMONSTRATING THE EXPRESSVOTE MACHINE THAT IS BEING  
11 REFERRED TO HERE. YOU WOULD NOT KNOW BECAUSE YOU NEVER  
12 CLICKED ON THAT LINK?

13 A. I WOULD NOT KNOW BECAUSE I NEVER CLICKED ON THE  
14 LINK, BUT I --

15 Q. WELL, IF YOU HAD CLICKED ON THE LINK, WOULDN'T  
16 YOU HAVE EXPECTED TO SEE THE EXACT MACHINE THAT WAS  
17 BEING DESCRIBED IN THIS ARTICLE?

18 A. I AM SORRY. YES, IF IT DESCRIBES THAT THE LINK  
19 IS A VIDEO OF THE MACHINE.

20 Q. OKAY. IT SAYS THIS IS A DEMONSTRATION. SO YOU  
21 WOULD ALSO EXPECT TO SEE WHAT THE BALLOT LOOKED LIKE,  
22 CORRECT?

23 A. YES, I SUPPOSE SO, IF IT'S A BALLOT, BUT IT'S A  
24 SUMMARY.

25 THE COURT: YOU DON'T HAVE TO SUPPOSE.

1 IF YOU WOULD JUST LOOK AT THE PARAGRAPH THAT SAYS "THIS  
2 VIDEO SHOWS."

3 THE WITNESS: YES. I HAVE NO REASON TO  
4 DOUBT THAT I WOULD.

5 THE COURT: YOU HAVE NO REASON TO DOUBT  
6 THAT YOU WOULD? I GUESS THAT'S AN ANSWER.

7 GO AHEAD.

8 BY MR. WIYGUL:

9 Q. WELL, EVEN WITHOUT HAVING LOOKED AT THE VIDEO,  
10 YOU KNOW FROM THE DESCRIPTION IN THE ARTICLE THAT IT'S  
11 EITHER GOING TO BE THE EXPRESSVOTE NON-XL MACHINE OR THE  
12 EXPRESSVOTE XL MACHINE, CORRECT?

13 A. YES.

14 Q. OKAY.

15 A. YES. IT'S AN EXPRESSVOTE MACHINE OF SOME KIND.

16 Q. LET'S TURN TO THE SECOND PAGE.

17 BEFORE WE GET THERE, I'M SORRY, AND I AM  
18 PARTICULARLY SORRY TO MS. FERRARI, BUT IF WE GO BACK TO  
19 THE EARLIER PAGE, DR. APPEL REFERS TO THE PAPER THAT  
20 GETS INSERTED INTO THE EXPRESSVOTE -- AND I GUESS WE  
21 DON'T HAVE TESTIMONY AS TO WHICH ONE IT IS -- BUT THE  
22 EXPRESSVOTE MACHINE -- IS A BLANK BALLOT, CORRECT?

23 A. YES.

24 Q. SO IF WE LOOK AT THE TOP --

25 A. HE'S WRITING FOR A LAY AUDIENCE, BUT --

1 Q. WELL, THIS WAS THE ARTICLE THAT YOU FORWARDED TO  
2 THE DEFENDANTS TWO DAYS BEFORE THE SETTLEMENT  
3 CONFERENCE, CORRECT?

4 A. THAT'S RIGHT.

5 Q. SO --

6 THE COURT: WAS DR. APPEL A FACULTY  
7 MEMBER WHEN YOU WERE GETTING YOUR PH.D.?

8 THE WITNESS: YES.

9 THE COURT: DID YOU STUDY UNDER HIM AT  
10 PRINCETON?

11 THE WITNESS: I WORKED WITH HIM WHILE I  
12 WAS AN UNDERGRADUATE.

13 THE COURT: AS AN UNDERGRADUATE. SO YOU  
14 COULD DESCRIBE HIM AS A MENTOR OF YOURS?

15 THE WITNESS: I SUPPOSE SO.

16 BY MR. WIYGUL:

17 Q. COULD YOU BLOW UP THE FIRST PARAGRAPH OR TWO ON  
18 THE SECOND PAGE, PLEASE.

19 THE COURT: MR. WIYGUL, WHY DON'T WE TAKE  
20 A SHORT BREAK. WE WILL HAVE LUNCH. SINCE MR. ARONCHICK  
21 DOES NOT EAT LUNCH, THE REST OF US WILL HAVE LUNCH.  
22 WHENEVER YOU RING THE LUNCH BELL, MR. MAAZEL.

23 MR. MAAZEL: THANKS, YOUR HONOR. CAN I  
24 ASK FOR AN APPROXIMATION OF HOW MUCH WE HAVE OF THIS  
25 WITNESS TO PLAN?

1 MR. WIYGUL: I WOULD SAY PROBABLY --  
2 MAYBE 20 MINUTES.

3 MR. MAAZEL: OKAY. I THINK IT WOULD BE  
4 PREFERABLE TO FINISH THIS WITNESS BEFORE LUNCH.

5 THE COURT: I WILL BE GUIDED BY YOU, MR.  
6 MAAZEL.

7 (SHORT BREAK.)

8 THE COURT: PLEASE BE SEATED.

9 CONTINUE, MR. WIYGUL.

10 MR. WIYGUL: THANK YOU, YOUR HONOR.

11 BY MR. WIYGUL:

12 Q. DR. HALDERMAN, BEFORE THE BREAK, I THINK YOUR  
13 MOST RECENT TESTIMONY WAS SOMETHING TO THE EFFECT OF,  
14 YOU THOUGHT THE REASON WHY DR. APPEL REFERRED TO THE  
15 EXPRESSVOTE PAPER RECORDS AS BALLOTS WAS BECAUSE HE WAS  
16 WRITING FOR A LAY AUDIENCE?

17 A. YES. I THINK THAT'S RIGHT, A GENERAL AUDIENCE.

18 Q. IS THAT BECAUSE THE -- CALLING THE EXPRESSVOTE  
19 PAPER RECORD BALLOTS WOULD BE CONSISTENT WITH THE  
20 ORDINARY LAY UNDERSTANDING OF THE TERM "BALLOT"?

21 A. WELL, I THINK IT'S -- THAT DISTINCTION IS NOT  
22 REALLY THE ONE THAT HE IS TRYING TO GET AT HERE.

23 THE COURT: WHAT IS THE NAME OF THIS  
24 PUBLICATION?

25 THE WITNESS: FREEDOM TO TINKER.

1 THE COURT: YOU REALLY THINK THAT FREEDOM  
2 TO TINKER IS READ BY A LAY AUDIENCE?

3 THE WITNESS: IT'S READ BY A VERY WIDE  
4 AUDIENCE.

5 THE COURT: IS IT?

6 THE WITNESS: YES.

7 THE COURT: HOW WIDE?

8 THE WITNESS: I CANNOT TELL YOU. I DON'T  
9 HAVE THE STATISTICS. BUT I KNOW WHEN I WRITE FOR IT,  
10 THERE ARE -- MOST OF THE PEOPLE WHO PROVIDE FEEDBACK ARE  
11 NONTECHNOLOGISTS.

12 THE COURT: NONTECHNOLOGISTS.

13 THE WITNESS: SO IT'S A TECHNOLOGY  
14 ORIENTED -- TECHNOLOGY AND POLICY ORIENTED BLOG.

15 THE COURT: IT'S WRITTEN BY FACULTY AT  
16 PRINCETON, IS THAT RIGHT?

17 THE WITNESS: IN GENERAL.

18 THE COURT: AND YOU THINK IT'S TARGETED  
19 TO A LAY AUDIENCE, IS THAT RIGHT?

20 THE WITNESS: THAT'S RIGHT.

21 THE COURT: LIKE THE INQUIRER? NO. MORE  
22 SOPHISTICATED THAN THE PEOPLE WHO READ THE INQUIRER, IF  
23 THAT'S POSSIBLE?

24 THE WITNESS: YES.

25 THE COURT: GO ON.

1 BY MR. WIYGUL:

2 Q. CAN WE BLOW UP -- I THINK WE STARTED WITH THE  
3 FIRST COUPLE OF PARAGRAPHS OF THE SECOND PAGE. GREAT.

4 AND THAT'S THE -- YOU CAN TAKE OFF THE  
5 TOP ONE IF THAT MAKES IT MORE READABLE.

6 SECOND PAGE BEGINS: UNION COUNTY NEW  
7 JERSEY AND THE ENTIRE STATE OF DELAWARE ARE (TO THE BEST  
8 OF MY KNOWLEDGE) IN THE PROCESS OF PURCHASING  
9 EXPRESSVOTE XL MACHINES, WHICH ARE LIKE THE TOUCHSCREENS  
10 SHOWN IN THE VIDEO BUT WITH A MUCH LARGER SCREEN THAT  
11 CAN SHOW THE WHOLE BALLOT. THERE'S THAT WORD "BALLOT"  
12 AGAIN, RIGHT?

13 A. YES.

14 Q. THE WHOLE BALLOT, AND THIS TIME USED  
15 SPECIFICALLY IN REFERENCE TO THE EXPRESSVOTE XL,  
16 CORRECT?

17 A. THERE IT'S TALKING ABOUT WHAT IS ON THE SCREEN.

18 Q. OKAY. AND HE SAYS: NEW JERSEY AND DELAWARE  
19 SHOULD NOT BUY THESE MACHINES. IF THEY INSIST ON BUYING  
20 THEM, THEY MUST DISABLE THE "PERMISSION TO CHEAT"  
21 FEATURE. RIGHT?

22 A. YES.

23 Q. SO DR. APPEL IS SAYING THAT THE SAME -- WHAT HE  
24 CALLED "PERMISSION TO CHEAT," WHICH I HAVE BEEN CALLING  
25 THE OPT-OUT FEATURE, OPT-OUT CONFIGURATION -- THAT

1       AFFECTS OR IS ENDEMIC TO THE EXPRESSVOTE MACHINE NON-XL,  
2       PRESUMABLY.   NOW DO YOU AGREE THAT BEFORE WHEN HE'S  
3       TALKING ABOUT JOHNSON COUNTY, HE IS NOT TALKING ABOUT  
4       THE XL?

5       A.           YES.

6       Q.           OKAY.   THAT'S HOW YOU INFER FROM THE CONTEXT,  
7       CORRECT?

8       A.           I WOULD INFER THAT FROM THE CONTEXT, READING IT  
9       NOW.

10      Q.           YOU WOULD PRESUME THE DEFENDANTS WOULD INFER THE  
11      SAME?

12      A.           I DON'T KNOW IF DEFENDANTS READ THIS OR NOT.

13      Q.           DIDN'T YOU INTEND FOR THEM TO READ IT?

14      A.           NO.    I HAD NO IDEA ANY OF THIS WAS GOING TO BE  
15      PASSED ON VERBATIM TO THE DEFENDANTS.

16      Q.           ALL RIGHT.   AND THEN HE GOES ON --

17                   THE COURT:   WAIT, WAIT, WAIT, WAIT, WAIT.  
18      YOU HAD NO IDEA THAT ANY OF THIS WAS GOING TO BE PASSED  
19      ON TO THE DEFENDANTS.   THAT'S EXACTLY WHAT YOU JUST  
20      SAID.

21                   THE WITNESS:   VERBATIM.

22                   THE COURT:   YET YOU SAID:   THAT SAID,  
23      THERE ARE FEATURES -- YOU CAN URGE PA TO CERTIFY THEM  
24      WITH RESTRICTIONS.   YOU KNEW SOME OF IT WAS GOING TO BE  
25      PASSED ON.   YOU ARE TELLING MR. MAAZEL TO PASS IT ON,



1 AREN'T YOU?

2 THE WITNESS: I AM --

3 THE COURT: SO YOU KNEW THAT SOME OF IT  
4 WAS GOING TO BE PASSED ON.

5 THE WITNESS: THAT SOME OF IT WAS GOING  
6 TO BE PASSED ON. I DIDN'T KNOW THAT THIS WOULD BE CUT  
7 AND PASTED.

8 BY MR. WIYGUL:

9 Q. SO IT'S CLEAR NOW FROM WHAT WE HAVE SEEN THAT IN  
10 THIS ARTICLE, WHICH WAS LINKED TO IN THE PARAGRAPH ABOUT  
11 THE EXPRESSVOTE MACHINES, THAT WENT TO DEFENDANTS, DR.  
12 APPEL IS TALKING ABOUT A SINGLE PROBLEM, RIGHT, WHICH HE  
13 CALLED "PERMISSION TO CHEAT" AND I HAVE CALLED OPT-OUT.  
14 RIGHT?

15 A. THAT'S RIGHT.

16 Q. HE IS SAYING IT AFFECTS TWO DIFFERENT MACHINES,  
17 CORRECT?

18 A. THAT'S WHAT HE IS SAYING, YES.

19 Q. AND BOTH OF THOSE ARE CALLED EXPRESSVOTE. ONE  
20 OF THEM HAS A MODIFIER AT THE END, CORRECT?

21 A. THAT'S RIGHT.

22 Q. IF YOU GO BACK TO JX 20, WHICH IS THE  
23 OCTOBER 9TH E-MAIL, YOUR PARAGRAPH BEGINS BY REFERRING  
24 TO THE ES&S EXPRESSVOTE MACHINES, PLURAL, CORRECT?

25 A. YES.

1 Q. SO NOW HAVING REVIEWED THAT ARTICLE, DO YOU  
2 AGREE WITH ME THAT IT WOULD HAVE BEEN PERFECTLY  
3 REASONABLE FOR DEFENDANTS TO READ WHAT YOU WROTE IN THAT  
4 OCTOBER 9TH E-MAIL AND ASSUME THAT YOU WERE REFERRING TO  
5 THE EXPRESSVOTE XL MACHINE?

6 A. I SUPPOSE SO.

7 Q. OKAY. NOW, DR. APPEL, AS WE SAW HERE, URGES  
8 JOHNSON COUNTY AND THEN HE URGES THE OTHER JURISDICTIONS  
9 THAT HE THOUGHT WERE LOOKING AT THE EXPRESSVOTE XL. HE  
10 EXPRESSLY URGES THEM NOT TO BUY THOSE MACHINES BECAUSE  
11 OF THIS FEATURE, CORRECT?

12 A. YES.

13 Q. YOU DON'T SAY THAT IN YOUR OCTOBER 9TH E-MAIL,  
14 IN THE PORTION OF THE OCTOBER 9TH E-MAIL THAT REFLECTS  
15 YOUR WRITING, CORRECT?

16 A. NO, I DON'T SAY THAT.

17 Q. IN FACT, YOU SUGGEST THAT THE XL MACHINE -- OR  
18 YOU SUGGEST THAT THE EXPRESSVOTE MACHINES, TO USE YOUR  
19 WORDS, BE CERTIFIED WITH RESTRICTIONS, CORRECT?

20 A. IF THEY WERE TO BE CERTIFIED, THEY SHOULD HAVE  
21 THESE RESTRICTIONS. THAT'S WHAT --

22 Q. YOU SUGGEST THAT MR. MAAZEL URGE PENNSYLVANIA TO  
23 CERTIFY THEM WITH RESTRICTIONS. THOSE WERE YOUR WORDS,  
24 CORRECT?

25 A. THAT'S WHAT IT SAYS, BUT WHAT THAT MEANS, AND I

1 DON'T KNOW HOW MR. MAAZEL INTERPRETED IT, BUT WHAT I  
2 INTENDED FOR HIM TO FORM IN HIS MIND WAS NOT TO URGE  
3 PENNSYLVANIA TO ADOPT THE MACHINES, BUT TO SAY IF  
4 PENNSYLVANIA IS TO ADOPT THESE MACHINES, THEY SHOULD  
5 HAVE RESTRICTIONS.

6 Q. YOU DEFINITELY DID NOT SAY URGE PENNSYLVANIA NOT  
7 TO ADOPT THESE MACHINES.

8 A. I DIDN'T SAY THAT, NO.

9 Q. NOW, CAN WE LOOK AT THE BLOG POST AGAIN BY DR.  
10 APPEL AND LET'S LOOK AT THE WAY HE DESCRIBES THE PAPER  
11 RECORDS, TO USE THE GENERIC TERM THAT I THINK IS  
12 UNOBJECTIONABLE IN THE SETTING, CREATED BY THE  
13 EXPRESSVOTE MACHINES. AND IF WE LOOK AT -- LOOK AT THE  
14 SECOND TO LAST PARAGRAPH ON THE FIRST PAGE. ALL RIGHT.  
15 HE REFERS TO THEM AS -- LET'S LOOK AT THE  
16 SECOND SENTENCE -- AS A BALLOT, CORRECT?

17 A. YES.

18 Q. IF IT'S THE LATTER -- THERE'S ANOTHER VERSION.  
19 THANK YOU.

20 A. HE IS REFERRING TO WHAT THE MACHINE SAYS ON ITS  
21 SCREEN. HE IS NOT REFERRING TO THE PIECE OF PAPER THAT  
22 COMES OUT AS A BALLOT.

23 Q. HOW ABOUT THE LAST SENTENCE WHERE HE TALKS ABOUT  
24 PRINTING THOSE VOTES ON THE PAPER BALLOT. HE IS  
25 REFERRING THERE TO THE PIECE OF PAPER, IS HE NOT?

1       A.           YES, HE IS, BUT FOR MORE GENERAL AUDITS.

2       Q.           AND HE IS NOT ONLY CALLING IT A BALLOT. HE IS  
3       CALLING IT A PAPER BALLOT.

4       A.           FOR PURPOSES OF THIS DISCUSSION THAT HE IS  
5       MAKING THE DISTINCTION, IT'S NOT REALLY VERY RELEVANT.

6       Q.           AND NOW I GRANT YOU BASED ON THE CONTEXT WE HAVE  
7       ESTABLISHED THAT THIS PART OF THE ARTICLE HE IS TALKING  
8       ABOUT NOT THE XL, BUT THE OTHER EXPRESSVOTE MACHINE,  
9       CORRECT?

10      A.           OKAY.

11      Q.           RIGHT? ALTHOUGH WE WERE AGREED THAT IT PRINTS  
12      THE SAME BALLOT AS THE XL DOES, THE PAPER RECORD, THE  
13      SAME PAPER RECORD.

14      A.           YES, PAPER RECORD.

15      Q.           NOW LET'S LOOK AT THE SECOND PAGE. HERE HE IS  
16      TALKING EXPRESSLY -- HERE HE IS TALKING SPECIFICALLY  
17      ABOUT THE EXPRESSVOTE XL, CORRECT?

18      A.           YES.

19      Q.           IF WE LOOK AT THE SECOND PARAGRAPH ON THAT PAGE,  
20      AND YOU LOOK AT NUMBERED ITEM 6, HE IS REFERRING  
21      SPECIFICALLY TO THE PIECE OF PAPER -- PAPER RECORD FROM  
22      THE -- PRINTED FROM THE EXPRESSVOTE XL MACHINE AS A  
23      PAPER BALLOT, CORRECT?

24      A.           YES. HE IS SAYING, WAIT FOR THE PAPER TO BE  
25      EJECTED, WHICH DOESN'T ACTUALLY HAPPEN IN PENNSYLVANIA

1 WE NOW KNOW, BUT THAT GIVES --

2 Q. HE IS NOT ACTUALLY SAYING WAIT FOR THE PIECE OF  
3 PAPER. HE IS SAYING WAIT FOR THE PAPER BALLOT.

4 A. HE WRITES THAT, YES.

5 Q. AND NOW LET'S LOOK BACK AT YOUR E-MAIL, JX 20.  
6 DO YOU RECALL AT THE OUTSET YOU WERE VERY ADAMANT IN  
7 CORRECTING THE JUDGE ON HIS TERMINOLOGY THAT THIS SHOULD  
8 BE CALLED NOT A BALLOT, RIGHT? ALL RIGHT. LET'S LOOK  
9 AT THE WAY YOU REFER TO IT. CAN YOU BLOW UP JUST THAT  
10 ES&S PARAGRAPH, PLEASE.

11 FIRST OF ALL, YOU REFER TO IT AS A  
12 "BALLOT-MARKING DEVICE," RIGHT?

13 A. YES.

14 Q. AND THEN YOU REFER TO "THE PAPER TRAIL."

15 A. YES.

16 Q. AND THEN YOU TALK ABOUT "PRINTING THE BALLOT."  
17 RIGHT?

18 A. YES.

19 Q. AND THEN YOU TALK ABOUT A "BALLOT BOX"?

20 A. YES.

21 Q. AND THEN YOU TALK ABOUT A COUPLE LINES DOWN THE  
22 RIGHT BALLOTS, VERIFYING THE BALLOTS BEFORE PRINTING  
23 THEM, "THEM" THE BALLOTS, RIGHT?

24 A. THAT'S REFERRING TO WHAT IS ON THE SCREEN.

25 Q. YES, BUT THEN YOU PRINT THEM AND THEN THEY ARE

1 PAPER, RIGHT?

2 A. WELL, IT WOULD BE VERY AWKWARD TO WRITE THAT IN  
3 A DIFFERENT WAY BUT --

4 Q. THAT'S OKAY BECAUSE YOU ALREADY REFERRED TO IT  
5 AS A BALLOT IN OTHER PLACES.

6 A. THAT'S WHAT IT SAYS IN THE E-MAIL.

7 Q. AND YOU REFER TO IT AS THE PAPER IN OTHER  
8 PLACES, RIGHT?

9 A. YES.

10 Q. AND THEN LASTLY YOU REFERRED TO IT AS THE  
11 "COMPLETED BALLOT" AFTER IT HAS BEEN PRINTED, RIGHT? SO  
12 NO AMBIGUITY THERE. YOU ARE REFERRING TO A PIECE OF  
13 PAPER, NOT SOMETHING ON THE SCREEN.

14 A. THAT'S WHAT IT SAYS.

15 Q. OKAY.

16 A. HOWEVER IMPRECISELY WORDED.

17 Q. AGAIN, THIS IS THE E-MAIL THAT PLAINTIFFS CHOSE  
18 TO SEND PROVIDING FEEDBACK FROM THEIR EXPERT ON THE  
19 MACHINES THE DEFENDANTS WERE CONTEMPLATING  
20 CERTIFICATION, THE MACHINES THAT PLAINTIFFS SPECIFICALLY  
21 ARE REQUESTING FROM DEFENDANTS.

22 MR. MAAZEL: OBJECTION.

23 THE COURT: HE DIDN'T MAKE THE DECISION  
24 TO SEND IT, SO HE DOES NOT HAVE TO ANSWER THAT.

25 MR. WIYGUL: OKAY.

1 BY MR. WIYGUL:

2 Q. THIS WAS SENT -- NO QUESTION ABOUT THIS. YOUR  
3 WORDS HERE WERE SENT TWO DAYS BEFORE THE SETTLEMENT  
4 CONFERENCE, CORRECT?

5 A. I DON'T KNOW WHEN THE SETTLEMENT CONFERENCE WAS.

6 Q. IF I TELL YOU IT HAS BEEN STIPULATED TO TAKE  
7 PLACE ON OCTOBER 11TH, YOU'LL AGREE, TWO DAYS  
8 BEFOREHAND.

9 A. OKAY.

10 Q. DID YOU AT ANY POINT BETWEEN THIS OCTOBER 9TH  
11 E-MAIL AND OCTOBER 12TH, THE MORNING OF OCTOBER 12TH, BY  
12 WHICH TIME IT HAS BEEN ESTABLISHED THAT THE LANGUAGE IN  
13 WHAT BECAME PARAGRAPH 2 AND 3 OF THE SETTLEMENT  
14 AGREEMENT WAS DECIDED -- AT ANY POINT IN THAT PERIOD DID  
15 YOU EVER COMMUNICATE TO DEFENDANTS ACTUALLY THIS --  
16 THESE EXPRESSVOTE PAPER RECORDS, I WAS SPEAKING LOOSELY  
17 WHEN I DESCRIBED THEM AS BALLOTS, AND I THINK THAT DR.  
18 APPEL WAS SPEAKING LOOSELY WHEN HE DESCRIBED THEM AS  
19 PAPER BALLOTS?

20 A. NO.

21 Q. TO YOUR KNOWLEDGE, DID PLAINTIFFS EVER SAY THAT  
22 TO DEFENDANTS?

23 MR. MAAZEL: OBJECTION.

24 THE WITNESS: I WAS NOT PART OF THE THOSE  
25 DECISIONS.

1 THE COURT: OVERRULED.

2 THE WITNESS: SO, NO --

3 THE COURT: YOU DON'T KNOW?

4 THE WITNESS: I HAVE NO IDEA.

5 THE COURT: OKAY.

6 BY MR. WIYGUL:

7 Q. NOW, EXPRESSVOTE BALLOTS -- EXPRESSVOTE PAPER  
8 RECORDS --

9 A. THANK YOU.

10 Q. -- THEY WERE NOT THE ONLY PAPER RECORDS ON A  
11 VOTING SYSTEM -- EXCUSE ME. THEY WERE NOT THE ONLY  
12 PAPER RECORDS PRINTED BY A VOTING DEVICE THAT WAS LISTED  
13 ON THE SEPTEMBER 21ST VOTING SYSTEM STATUS REPORT THAT  
14 YOU REVIEWED. THEY WERE NOT THE ONLY EXAMPLE OF  
15 MACHINES THAT PRINTED BALLOTS WITH ONLY THE VOTER'S  
16 SELECTION, RATHER THAN THE WHOLE MENU OF OPTIONS,  
17 CORRECT?

18 A. NO, I DON'T THINK SO. THERE ARE DOZENS OF  
19 MACHINES THAT ARE IN CONFIGURATIONS ON THAT LIST.

20 Q. I THINK YOU REFERRED TO THAT AS A SUMMARY  
21 BALLOT, IS THAT RIGHT?

22 A. AS IT'S -- HAVE I EVER REFERRED TO IT?

23 Q. YES. I AM TRYING TO SEE IF WE CAN AGREE ON SOME  
24 NOMENCLATURE FOR REFERENCE.

25 A. SO I THINK A VALID -- WHAT ARE -- WHAT HAVE WE



1 BEEN CALLING IT, A PRINTOUT, I THINK, OR A SUMMARY CARD  
2 IS PROBABLY THE MOST SPECIFIC NOMENCLATURE.

3 THE COURT: CALL IT ANYTHING BUT LATE FOR  
4 DINNER. BUT LET'S MOVE.

5 BY MR. WIYGUL:

6 Q. LET'S LOOK AT JX 59, WHICH I BELIEVE IS IN  
7 EVIDENCE.

8 THE COURT: 59?

9 MR. WIYGUL: YES, 59.

10 BY MR. WIYGUL:

11 Q. AND THIS -- THERE HAS BEEN TESTIMONY THIS IS AN  
12 EXAMPLE OF A BALLOT PRODUCED BY -- EXCUSE ME -- A PAPER  
13 RECORD PRODUCED BY A HART BALLOT-MARKING DEVICE,  
14 CORRECT?

15 A. YES.

16 Q. AND YOU DON'T HAVE ANY OBJECTION -- I CAN CALL  
17 IT A HART BALLOT-MARKING DEVICE. BUT SOMEHOW YOU DON'T  
18 WANT ME TO CALL IT PRINTED TO MARK THE BALLOT, IS THAT  
19 RIGHT?

20 A. A BALLOT-MARKING DEVICE IS THE TERM FOR THE  
21 PIECES OF EQUIPMENT THAT PRINT THESE THINGS.

22 Q. "THESE THINGS" THAT ARE NOT BALLOTS?

23 A. WHATEVER YOU WANT TO CALL THEM.

24 Q. THIS IS ALSO AN EXAMPLE, RIGHT -- FIRST OF ALL,  
25 THIS IS AN EXAMPLE OF A PAPER RECORD PRINTED BY A

1 BALLOT-MARKING DEVICE THAT IS ONE OF THE COMPONENTS OF  
2 THE SYSTEMS THAT WAS LISTED IN THE SEPTEMBER 21ST  
3 REPORT, RIGHT?

4 A. IT IS.

5 Q. AND THIS IS ALSO WHAT YOU I THINK WERE REFERRING  
6 TO AS A SUMMARY CARD. IT DOESN'T PRINT THE WHOLE MENU  
7 OF OPTIONS, CORRECT?

8 A. THAT'S RIGHT.

9 Q. ALL RIGHT. CAN YOU LOOK AT JX 54, PLEASE.

10 THIS IS -- I THINK THE TESTIMONY HAS BEEN  
11 THIS IS AN EXAMPLE OF A DOMINION -- A PAPER RECORD  
12 PRINTED BY A DOMINION BALLOT-MARKING DEVICE, CORRECT?

13 A. YES.

14 Q. AND THIS -- THAT DOMINION BALLOT-MARKING DEVICE  
15 WAS ALSO ONE OF THE COMPONENTS OF THE SYSTEMS LISTED ON  
16 THE SEPTEMBER 21ST REPORT, RIGHT?

17 A. YES, YES.

18 Q. AND LIKEWISE, IT DOESN'T PRINT THE WHOLE MENU OF  
19 OPTIONS.

20 A. THAT'S RIGHT.

21 Q. AND CAN WE LOOK AT JX 62, ON THE RIGHT.

22 THIS IS -- I BELIEVE THE TESTIMONY HAS  
23 BEEN, AND IF NOT YOU CAN CONFIRM IT FOR ME, THIS IS AN  
24 FOR EXAMPLE OF A PAPER RECORD PRINTED BY A UNISYN  
25 BALLOT-MARKING DEVICE.

1 A. YES. THERE HAS BEEN TESTIMONY TO THAT EFFECT.

2 Q. I THOUGHT THERE WAS. OKAY. AND THIS IS ALSO --  
3 THIS DEVICE IS ALSO A COMPONENT OF ONE OF THE SYSTEMS  
4 THAT WAS LISTED ON THE SEPTEMBER 21ST REPORT, RIGHT?

5 A. THAT'S RIGHT. THE COMPONENTS THAT PRINT  
6 DIFFERENT STYLES.

7 Q. SIMILARLY, DOES NOT PRINT A FULL MENU OF  
8 OPTIONS, CORRECT?

9 A. YES, THAT'S CORRECT.

10 Q. SO BY MY COUNT NOW IF WE TAKE THE EXPRESSVOTE  
11 2.1 AND THE EXPRESSVOTE XL THAT WE AGREED WERE  
12 COMPONENTS OF THE EVS SYSTEM ON THE REPORT, THERE ARE  
13 FIVE DIFFERENT EXAMPLES OF BALLOT-MARKING DEVICES ON THE  
14 LIST, RIGHT, OR COMPONENTS OF THE SYSTEMS ON THE LIST,  
15 THAT PRINT SUMMARY CARDS, AS YOU CALL THEM, CORRECT?

16 A. YES.

17 Q. NOT ONCE IN YOUR E-MAIL DID YOU EVER OBJECT TO  
18 THAT, CORRECT?

19 A. IN THAT NONEXHAUSTIVE LIST OF POTENTIAL  
20 PROBLEMS, THAT'S RIGHT.

21 Q. THE EXPRESSVOTE BALLOTS ALSO WERE NOT THE ONLY  
22 BALLOTS WHERE THE VOTE IS TABULATED FROM A HUMAN  
23 READABLE CODE, CORRECT?

24 A. THAT'S CORRECT.

25 Q. ALL RIGHT. SO THAT'S ALSO TRUE OF --

1 A. I'M SORRY -- A HUMAN READABLE CODE?

2 Q. I'M SORRY. HUMAN UNREADABLE CODE.

3 A. YOU MEAN UNREADABLE CODE.

4 Q. HUMAN INSCRUTABLE CODE.

5 A. THAT'S RIGHT.

6 Q. SO THE UNISYN SYSTEM IS ANOTHER -- EXCUSE ME,  
7 THE UNISYN PAPER RECORD IS ANOTHER EXAMPLE OF THAT,  
8 RIGHT?

9 A. I AM ACTUALLY NOT WILLING TO SAY THAT THAT IS A  
10 HUMAN UNREADABLE CODE IN THIS CASE, BUT --

11 Q. AND JUST SO WE ARE ON THE SAME PAGE, SO TO  
12 SPEAK, YOU ARE REFERRING -- BY THE CODE WE ARE REFERRING  
13 TO -- WE'RE TALKING ABOUT THIS --

14 A. IT'S A CODE. IT'S A CODE OF SOME KIND.

15 Q. OKAY. I CAN'T READ THAT. ARE YOU TELLING ME  
16 YOU CAN READ THAT, SIR?

17 A. WE COULD PROBABLY TRAIN YOU TO READ IT.

18 Q. OKAY. DO YOU THINK THE AVERAGE VOTER --

19 A. THE AVERAGE VOTER CAN'T.

20 Q. -- IN THE POLLING PLACE IS ABLE TO READ THAT?

21 A. I WILL CONCEDE THAT.

22 Q. THAT THE AVERAGE VOTER IS NOT ABLE TO READ THAT?

23 A. YES.

24 Q. AND THE DOMINION BALLOT-MARKING DEVICE THAT WE  
25 WERE JUST LOOKING AT, I BELIEVE IT'S 54, THAT'S ANOTHER

25 MR. MAAZEL: YOUR HONOR, CAN I BE HEARD

1 ON THIS DOCUMENT WHICH IS NOT IN EVIDENCE.

2 MR. WIYGUL: IT'S NOT IN EVIDENCE, THAT'S  
3 TRUE.

4 THE COURT: SURE.

5 MR. MAAZEL: SO THIS INCLUDES A TWEET  
6 FROM DR. STEIN. WE DO NOT OBJECT TO THAT COMING INTO  
7 EVIDENCE. IT ALSO INCLUDES A WHOLE BUNCH OF -- I AM NOT  
8 SURE IF THEY ARE TWEETS OR WHAT THEY ARE, BUT SOMETHING  
9 -- SOME SERIES OF COMMENTS BY A WOMAN NAMED JENNIFER  
10 COHN.

11 THE COURT: YES, I SEE IT.

12 MR. MAAZEL: AND I OBJECT TO THIS ON  
13 HEARSAY. I OBJECT TO THIS ON RELEVANCE. GOD KNOWS HOW  
14 MANY PEOPLE RESPOND TO DR. STEIN'S TWEETS, PROBABLY  
15 THOUSANDS. AND THE IDEA THAT WE CAN INTRODUCE IN COURT  
16 TWEETS OR RESPONSES JUST PERSONS -- I CAN'T SEE HOW THIS  
17 IS ADMISSIBLE ANYWAY.

18 MR. WIYGUL: MAY I ADDRESS THE HEARSAY  
19 OBJECTION, YOUR HONOR?

20 THE COURT: SURE.

21 MR. WIYGUL: YOU'LL NOTE THAT THERE IS A  
22 DISCUSSION AMONG THE REPLIES HERE BETWEEN JENNIFER COHN  
23 AND A MAN BY THE NAME OF DAVE SCHWAB. AND THE  
24 PLAINTIFFS HAVE STIPULATED THAT DAVE SCHWAB WAS AT THIS  
25 TIME DR. STEIN'S COMMUNICATIONS DIRECTOR. AND SO WE

1 THINK HE IS CLEARLY -- COMES WITHIN THE STATEMENT OF A  
2 PARTY OPPONENT. AND EVEN BEYOND THAT, IT WOULD BE  
3 RELEVANT TO SHOW WHAT KNOWLEDGE PLAINTIFFS HAD OR WHAT  
4 THEY ARE ON NOTICE OF AT THE RELEVANT TIME REGARDING THE  
5 MACHINE.

6 THE COURT: I WILL OVERRULE THE  
7 OBJECTION. I WON'T ACCEPT IT FOR THE TRUTH OF WHAT WAS  
8 ASSERTED, BUT FOR THE PLAINTIFFS' STATE OF MIND  
9 CERTAINLY.

10 BY MR. WIYGUL:

11 Q. SO DR. HALDERMAN, IF --

12 THE COURT: OTHER THAN THE STEIN  
13 DECLARATION ITSELF, WHICH IS AT THE TOP.

14 MR. WIYGUL: YOUR HONOR, MAY I CLARIFY AS  
15 TO MR. SCHWAB WHO IS --

16 THE COURT: SCHWAB'S STATEMENTS ARE THE  
17 STATEMENTS OF A PARTY OPPONENT AND CAN BE CONSIDERED FOR  
18 THE TRUTH. WHAT HE IS RESPONDING TO, I WILL -- FOR THE  
19 STATE OF KNOWLEDGE THAT THE PLAINTIFFS HAVE. I CANNOT  
20 SAY THAT MS. COHN'S STATEMENTS ARE TRUE, BUT WHATEVER  
21 THEY SAY, MR. SCHWAB AND BY EXTENSION THE PLAINTIFF KNEW  
22 ABOUT THEM.

23 BY MR. WIYGUL:

24 Q. SO THIS -- YOU CAN SEE DR. STEIN'S TWEET IS  
25 DATED NOVEMBER 28, 2018. DO YOU SEE THAT?

1 A. YES, I DO.

2 Q. AND THAT WAS THE DATE OF THE SETTLEMENT  
3 AGREEMENT IN THIS CASE, RIGHT?

4 A. YES.

5 Q. AND IN FACT HER TWEET IS HERALDING THAT  
6 SETTLEMENT AGREEMENT, CORRECT?

7 A. YES.

8 Q. AND THEN IF YOU LOOK ON THE SECOND PAGE, DO YOU  
9 SEE THAT'S WHERE THERE ARE SOME TWEETS BY DAVE SCHWAB AT  
10 THE TOP?

11 A. I DO.

12 Q. HE IS THE ONE WE HAVE ESTABLISHED -- THE PARTIES  
13 HAVE STIPULATED WAS DR. STEIN'S COMMUNICATIONS DIRECTOR.  
14 AND THEN THERE'S A TWEET BY JENNIFER COHN. DO YOU SEE  
15 THAT?

16 A. I DO.

17 Q. DO YOU KNOW WHO JENNIFER COHN IS?

18 A. I DON'T REALLY. SHE IS -- I HAVE HEARD THAT SHE  
19 IS SOME LAWYER AND ELECTION INTEGRITY ADVOCATE, I  
20 SUPPOSE. SHE TWEETS VERY, VERY FREQUENTLY.

21 Q. SHE'S PROLIFIC.

22 A. SHE'S VERY PROLIFIC. I THINK I MAY WELL HAVE  
23 HER MUTED ON TWITTER.

24 Q. SHE IS A VOCAL ADVOCATE FOR HAND-MARKED PAPER  
25 BALLOTS IN PARTICULAR, CORRECT?



1 A. I SUPPOSE.

2 Q. SHE HAD A PIECE THAT WAS RECENTLY PUBLISHED IN  
3 THE NEW YORK REVIEW OF BOOKS. ARE YOU AWARE OF THAT  
4 PIECE?

5 A. I DON'T KNOW.

6 Q. HERE SHE IS SAYING -- SHE SAYS: IF IT ISN'T  
7 HAND MARKED, EXCEPT FOR ADA USE, IT'S A SCAM. AND THEN  
8 SHE EMBEDS A TWEET AND THIS IS NOVEMBER 29TH. SHE SAYS:  
9 I HATE TO BE DEBBIE DOWNER, BUT THIS AGREEMENT,  
10 REFERRING I THINK TO THE SETTLEMENT AGREEMENT IN THIS  
11 CASE, ALLOWS PENNSYLVANIA TO BUY AWFUL UNIVERSAL USE  
12 TOUCH SCREEN BALLOT MARKERS AND SCANNERS THAT GENERATE  
13 THE COMPUTER MARKED SO-CALLED PAPER BALLOTS WITH  
14 BARCODES THAT I HAVE BEEN WARNING ABOUT.

15 DO YOU SEE THAT?

16 A. I SEE THAT.

17 Q. SHE IS CLEARLY TALKING HERE ABOUT EXACTLY THE  
18 SORT OF HYBRID BALLOT-MARKING DEVICES. SHE CALLS THEM  
19 UNIVERSAL USE THAT WE HAVE BEEN DISCUSSING IN THIS CASE,  
20 RIGHT?

21 MR. MAAZEL: OBJECTION.

22 THE COURT: OVERRULED.

23 THE WITNESS: THAT WOULD ENCOMPASS THOSE  
24 DEVICES, I THINK.

25 Q. AND SHE IS MAKING CLEAR IN RESPONSE TO DR.

1 STEIN'S COMMUNICATIONS DIRECTOR TWEET THAT SHE OBJECTS  
2 TO THE PAPER RECORDS PRODUCED BY THESE SYSTEMS BECAUSE  
3 AT LEAST AMONG OTHER REASONS THEY USE BARCODES, RIGHT?

4 A. THAT'S ONE OF HER OBJECTIONS.

5 Q. AND THEN IF WE TURN THE PAGE, I THINK THERE'S A  
6 REPRINT OF THAT SAME EMBEDDED TWEET ABOUT DEBBIE DOWNER  
7 AT THE TOP, AND THEN YOU SEE A RESPONSE BY DAVE SCHWAB,  
8 SEVERAL RESPONSES BY DAVE SCHWAB.

9 A. I SEE THAT.

10 Q. HE IS DEFENDING THE SETTLEMENT AGAINST MS.  
11 COHN'S CRITICISM, CORRECT?

12 A. YES.

13 Q. AND AT THE BOTTOM OF THAT PAGE HE SAYS -- AND  
14 THIS IS OFTEN HOW TWEETS ARE DONE, RIGHT, BECAUSE YOU  
15 ARE LIMITED TO A CERTAIN NUMBER OF CHARACTERS AND YOU  
16 WILL OFTEN HAVE A MULTI-TWEET RESPONSE AND THEN THE  
17 WRITER WILL INDICATE THAT BY PUTTING THE "1/2/" THAT WE  
18 SEE HERE, RIGHT?

19 A. YES.

20 Q. YOU RECOGNIZE THAT CONVENTION?

21 A. YES.

22 Q. SO IF WE LOOK AT THE 4/ TWEET, HE SAYS: ON THE  
23 QUESTION OF WHETHER BALLOT-MARKING DEVICES BMD'S ARE  
24 GOOD OR BAD, EXPERTS HAVE WIDELY DIVERGENT OPINIONS.

25 DO YOU SEE THAT?

1 A. YES.

2 Q. SO DAVE SCHWAB IS CLEARLY AWARE THAT THE  
3 SETTLEMENT AGREEMENT PERMITS BALLOT-MARKING DEVICES.  
4 THAT'S HOW YOU READ THIS TWEET, DON'T YOU?

5 A. BALLOT-MARKING DEVICES ENCOMPASSES QUITE A LOT.

6 Q. OKAY.

7 A. INCLUDING NOT ONLY MACHINES LIKE THE --

8 Q. YES IS THE ANSWER, IS THAT RIGHT?

9 A. YES.

10 Q. IF WE GO TO THE NEXT PAGE, HE GOES -- FIRST  
11 TWEET THERE IS HE IS TALKING ABOUT SOME OF THE BENEFITS  
12 THAT BALLOT-MARKING DEVICES HAVE, CORRECT, THE FIRST  
13 SENTENCE?

14 A. YES.

15 Q. AND THEN THE NEXT TWEET HE SAYS: BARCODES  
16 SPECIFICALLY HAVE BEEN A LIGHTNING ROD FOR CRITICISM,  
17 BUT THE ACTUAL RISKS ARE SMALL SO LONG AS POST-ELECTION  
18 AUDITS MANUALLY VERIFY THE HUMAN READABLE TEXT ON THE  
19 BALLOT. DO YOU SEE THAT?

20 A. YES, I DO.

21 Q. SO MR. SCHWAB IS CLEARLY DEFENDING THE FACT THAT  
22 THE SETTLEMENT AGREEMENT ALLOWS THE USE OF  
23 BALLOT-MARKING DEVICES THAT USE BARCODES TO TABULATE THE  
24 VOTES, ISN'T HE?

25 MR. MAAZEL: OBJECTION.

1 THE COURT: OVERRULED.

2 THE WITNESS: CAN YOU REPEAT THAT?

3 BY MR. WIYGUL:

4 Q. MR. SCHWAB HERE IS CLEARLY DEFENDING THE FACT  
5 THAT THE SETTLEMENT AGREEMENT ALLOWS THE USE OF  
6 BALLOT-MARKING DEVICES THAT PRINT PAPER RECORDS WITH  
7 BARCODES TO TABULATE THE VOTES.

8 A. WELL, BUT IN THE NEXT TWEET HE IS SAYING  
9 SOMETHING THAT MODIFIES THAT.

10 Q. CAN YOU JUST ANSWER MY QUESTION ABOUT THE TWEET  
11 THAT WE JUST LOOKED AT?

12 A. WITHOUT THE CONTEXT OF THE SUBSEQUENT MESSAGE?

13 Q. HE IS REFERRING TO PAPER RECORDS PRODUCED BY  
14 BALLOT-MARKING DEVICES WITH THE PAPER RECORDS THAT HAVE  
15 BARCODES, RIGHT?

16 A. YES, HE IS.

17 Q. HE IS SAYING THE RISKS ARE SMALL SO LONG AS  
18 POST-ELECTION AUDITS MANUALLY VERIFY THE HUMAN READABLE  
19 TEXT IN THE BALLOT.

20 A. HE SAYS THAT.

21 Q. AND THEN YOU MENTION THE NEXT TWEET AND IN FACT  
22 THAT'S YOUR TWITTER USER NAME, THAT HASHTAG AT THE  
23 BOTTOM, RIGHT?

24 A. THAT'S RIGHT.

25 Q. AND THAT MEANS THAT YOU GET A NOTIFICATION OF

1 THAT TWEET, CORRECT?

2 A. I DON'T READ THOSE NOTIFICATIONS.

3 Q. THAT WASN'T MY QUESTION, SIR.

4 A. YES.

5 Q. AND THEN THERE IS AN ENSUING RESPONSE BY  
6 JENNIFER COHN, CORRECT, TO MR. SCHWAB'S TWEETS?

7 A. YES.

8 Q. OKAY. AND THEN IF YOU GO TO A COUPLE OF PAGES  
9 FORWARD, THE ONE THAT STARTS WITH 6 -- -

10 A. YES.

11 Q. -- SHE SAYS -- SHE IS REFERRING TO JURISDICTIONS  
12 THROUGHOUT THE COUNTRY THAT FLOCK TO BUY THE UNIVERSAL  
13 USE TOUCHSCREEN BALLOT MARKERS THAT GENERATE THE  
14 BARCODED SUMMARY CARDS, RIGHT?

15 A. YES.

16 Q. AGAIN, SHE IS REFERRING TO THE PAPER RECORDS  
17 THAT THE XL AND THE OTHER EXPRESSVOTE MACHINE AND I  
18 GUESS THE DOMINION USES A QR CODE, AND UNISYN USES A  
19 CODE. THEY ALL USE CODES TO TABULATE THE VOTE, RIGHT?

20 A. I AM SORRY. THE LIST OF THINGS THAT YOU SAID?

21 Q. CAN WE AGREE THAT SHE IS REFERRING TO --

22 MR. MAAZEL: YOUR HONOR, CAN I OBJECT?

23 THE COURT: WAIT, WAIT. ASK YOUR

24 QUESTION.

25 MR. WIYGUL: I WILL WITHDRAW THE OTHER

1 QUESTION.

2 THE COURT: OKAY.

3 BY MR. WIYGUL:

4 Q. CAN WE AGREE THAT MS. COHN IS REFERRING TO HERE,  
5 AT LEAST PERHAPS AMONG OTHER THINGS, THE KINDS OF PAPER  
6 RECORDS THAT ARE PRODUCED BY THE EXPRESSVOTE AND THE  
7 EXPRESSVOTE XL?

8 A. YES, THE BARCODES AND SUMMARY CARDS.

9 MR. MAAZEL: CAN I JUST BE HEARD BRIEFLY,  
10 YOUR HONOR, WITH RESPECT TO THE LAST TWO PAGES OF THIS  
11 EXHIBIT?

12 THE COURT: YES.

13 MR. MAAZEL: AND IT'S THAT THERE APPEAR  
14 TO BE A WHOLE SERIES OF, I GUESS, TWEETS BY JENNIFER  
15 COHN, I DON'T KNOW, 20 OF THEM, MANY OF THEM. BUT THERE  
16 IS NO EVIDENCE THAT DAVE SCHWAB OR ANYONE AFFILIATED  
17 WITH THE PLAINTIFFS READ THOSE, IN SHORT.

18 THE COURT: I THINK THAT'S A FAIR  
19 INFERENCE ON THE BACK AND FORTH, THAT HE LOOKED AT THEM.

20 GO AHEAD.

21 BY MR. WIYGUL:

22 Q. CAN WE SKIP TO THE JENNIFER COHN TWEET THAT  
23 STARTS 15/.

24 A. YES.

25 Q. SO SHE IS CONTINUING HERE HER ATTACK ON THE

1 SETTLEMENT AGREEMENT, CORRECT?

2 A. YES.

3 Q. OKAY. SHE SAYS: ALTHOUGH I ADMIRE THAT -- AND  
4 THAT'S YOUR USER NAME AGAIN, RIGHT?

5 A. YES.

6 Q. THAT'S AS IF SHE SAID DR. HALDERMAN?

7 A. YES.

8 Q. ALTHOUGH I ADMIRE DR. HALDERMAN'S WORK  
9 EXPLAINING THE MANY WAYS IN WHICH TOUCHSCREEN VOTING  
10 MACHINES GET HACKED, I HAVE REFERENCED HIS WORK MANY  
11 TIMES IN MY ARTICLES, I'VE NEVER SEEN HIM MENTION THE  
12 GLARING CONCERNS WITH THESE UNIVERSAL USE TOUCHSCREEN  
13 BALLOT MARKERS. DO YOU SEE THAT?

14 A. YES.

15 Q. AND THEN SHE GOES ON TO SAY: WHICH IS VERY  
16 CONCERNING IF HE IS THE ONE WHO IS GOING TO ADVISE  
17 PENNSYLVANIA AS TO WHAT TYPES OF SYSTEMS TO CERTIFY?

18 A. YES.

19 Q. AND YOU TESTIFIED BEFORE THAT YOU WERE AWARE  
20 THAT AT LEAST SOME OF THE SYSTEMS THAT PENNSYLVANIA WAS  
21 CONSIDERING CERTIFYING USED SOME -- WHAT YOU CALL  
22 SUMMARY CARD BALLOTS WITH BARCODES TO TABULATE THE VOTE.  
23 YOU WERE AWARE OF THAT AT THE TIME OF THE SETTLEMENT.

24 A. THAT SOME OF THE MACHINES IN THOSE SUITES. I  
25 DIDN'T KNOW WHICH SPECIFIC MACHINES WERE BEING

1 CONSIDERED FOR CERTIFICATION.

2 Q. AND THEN CAN WE GO TO 27/, PLEASE.

3 AND SHE IS CONTINUING. SHE SAID: I  
4 CERTAINLY HOPE THAT -- AGAIN THERE IS YOUR TWEETER USER  
5 NAME -- DR. HALDERMAN AND OTHERS WILL STEP UP AND  
6 ADDRESS WHAT SHOULD BE THE ELEPHANT IN THE ROOM,  
7 BARCODED SUMMARY CARDS AND UNIVERSAL USE TOUCHSCREEN  
8 BALLOT MARKERS ARE ANATHEMA TO ELECTION INTEGRITY. DO  
9 YOU SEE THAT?

10 A. YES.

11 Q. CAN WE TURN TO 30/ -- THERE IS NO SLASH HERE,  
12 JUST A PERIOD, BUT CONTINUING ON WITH THE SAME TWITTER  
13 SCREEN, HERE SHE IS REFERRING TO THE JURISDICTIONS THAT  
14 WE SAW BEFORE THAT HAD SELECTED EITHER THE EXPRESSVOTE  
15 NON-XL OR THE EXPRESSVOTE XL MACHINE, CORRECT?

16 A. YES.

17 Q. IN FACT, SHE IS CITING TO THE VERY FREEDOM TO  
18 TINKER ARTICLE THAT YOU HAD SENT TO MR. MAAZEL WHO SENT  
19 IT TO ON TO DEFENDANTS, CORRECT?

20 A. YES.

21 Q. AND THEN 31: IT CERTAINLY APPEARS TO ME THAT  
22 PENNSYLVANIA WILL BE NEXT, UNLESS OF COURSE PEOPLE LIKE  
23 YOU -- AND THERE IS YOUR TWITTER USER NAME AGAIN, RIGHT  
24 -- MAKE A CONCERTED EFFORT TO HELP STOP IT. THANKS FOR  
25 READING.



1 RIGHT?

2 A. YES.

3 Q. AND THIS WAS NOVEMBER 29, 2018, WHICH WAS THE  
4 DAY AFTER THE SETTLEMENT AGREEMENT WAS SIGNED, CORRECT?

5 A. YES, I THINK THAT'S THE RIGHT DATE.

6 Q. SPECIFICALLY EXHORTING YOU AND THE PLAINTIFFS TO  
7 TAKE SOME SORT OF ACTION AND SPECIFICALLY CRITICIZING  
8 THE SETTLEMENT AGREEMENT BECAUSE IT ALLOWS, ON HER  
9 READING AT LEAST, FOR THE CERTIFICATION OF MACHINES THAT  
10 PRODUCE SUMMARY CARDS WITH BARCODES, IS THAT RIGHT?

11 A. SHE HAS A VARIETY OF CONCERNS, BUT, YES.

12 Q. THAT'S -- THOSE OF SOME OF THEM, RIGHT? AND WE  
13 SAW MR. MAAZEL'S TWEET EARLIER FROM I THINK IT WAS THE  
14 SAME DAY OR MAYBE THE DAY BEFORE, WHERE HE SAID WE ARE  
15 GOING TO BE WATCHING CLOSELY TO MAKE SURE PENNSYLVANIA  
16 IMPLEMENTS THE TERMS OF THE SETTLEMENT AGREEMENT. DO  
17 YOU REMEMBER THAT?

18 A. YES, I SAW THAT.

19 Q. NOW, WE TALKED ABOUT THIS PRINthead ISSUE,  
20 RIGHT? YOU KNOW WHAT I AM REFERRING TO THERE, THE FACT  
21 THAT IN YOUR VIEW IT'S THEORETICALLY POSSIBLE THAT THE  
22 EXPRESSVOTE XL COULD PRINT ADDITIONAL SELECTIONS ON THE  
23 BALLOT AFTER THE VOTER HAS VERIFIED IT AND CAST HIS OR  
24 HER VOTE?

25 A. YES.

1 Q. AND THAT DESIGN FEATURE, THAT WAS KNOWN ABOUT IN  
2 THE PUBLIC DOMAIN LONG BEFORE PLAINTIFFS EVER RAISED IT  
3 WITH DEFENDANTS IN THIS CASE, ISN'T THAT RIGHT?

4 A. WELL, I AM NOT SURE IF IT WAS CONFIRMED THAT THE  
5 XL SUFFERED FROM THAT FLAW.

6 Q. LET'S LOOK AT DX II, PLEASE.

7 A. I AM SORRY, WHERE?

8 Q. IT'S SHOULD BE IN THE DX.

9 THE COURT: I THINK IT'S THE VERY LAST  
10 TAB.

11 MR. WIYGUL: IT LOOKS LIKE ROMAN NUMERAL  
12 II.

13 THE WITNESS: THANK YOU, YOUR HONOR.  
14 YES.

15 MR. LIEB: YOUR HONOR, THIS AGAIN IS NOT  
16 IN EVIDENCE. I WOULD JUST ASK THAT COUNSEL TRY TO MOVE  
17 DOCUMENTS IN EVIDENCE BEFORE PUTTING THEM ON THE SCREEN,  
18 NOT AFTER.

19 MR. WIYGUL: THAT'S A FAIR POINT. AND IF  
20 I HAVE NOT ALREADY, I DON'T KNOW IF I MOVED INTO  
21 EVIDENCE THE DR. STEIN TWITTER FEED, BUT IF I HAVE NOT,  
22 I WOULD LIKE TO DO THAT.

23 THE COURT: SUBJECT TO MR. MAAZEL'S  
24 OBJECTION, IT WILL BE ADMITTED.

25 (DEFENSE EXHIBIT DX N IS ADMITTED INTO

1 EVIDENCE.)

2 THE COURT: AND YOU ARE MOVING THROUGH  
3 THIS?

4 MR. WIYGUL: I AM ALSO MOVING IN DX II,  
5 YOUR HONOR.

6 THE COURT: ARE YOU OBJECTING, MR.  
7 MAAZEL?

8 MR. MAAZEL: I AM, YOUR HONOR, ON HEARSAY  
9 GROUNDS.

10 MR. WIYGUL: I DON'T PLAN TO USE IT FOR  
11 THE TRUTH OF THE MATTER, YOUR HONOR.

12 THE COURT: JUST FOR THE STATE OF  
13 KNOWLEDGE.

14 MR. WIYGUL: CORRECT.

15 THE COURT: AND YOU STIPULATE TO THE  
16 AUTHENTICITY, IS THAT RIGHT, MR. MAAZEL?

17 MR. MAAZEL: YES, YOUR HONOR.

18 THE COURT: YOUR OBJECTION IS OVERRULED.

19 IT WILL BE ADMITTED SUBJECT TO THE LIMITATION.

20 MR. WIYGUL HAS A CASE. LET'S STATE IT.

21 MR. WIYGUL: THANK YOU, YOUR HONOR.

22 (DEFENSE EXHIBIT DX II ADMITTED INTO  
23 EVIDENCE.)

24 BY MR. WIYGUL:

25 Q. DR. HALDERMAN, WE ARE BACK NOW AT THE FREEDOM TO

1 TINKER WEBSITE, CORRECT?

2 A. THAT'S RIGHT.

3 Q. AND THIS IS AN ARTICLE THAT WAS AGAIN POSTED BY  
4 DR. APPEL, CORRECT?

5 A. THAT'S RIGHT.

6 Q. IT'S A DIFFERENT ARTICLE THOUGH, RIGHT?

7 A. YES.

8 Q. THIS ONE WAS POSTED OCTOBER 16, 2018, CORRECT?

9 A. THAT'S RIGHT.

10 Q. AND THE PREVIOUS ONE WAS POSTED -- THE ONE THAT  
11 YOU SENT TO MR. MAAZEL WHO SENT IT ON TO DEFENDANTS, WAS  
12 POSTED SEPTEMBER 14, 2018. RIGHT?

13 A. THAT'S RIGHT.

14 Q. SO THIS IS STILL -- OCTOBER 16TH IS ABOUT SIX  
15 WEEKS BEFORE THE SETTLEMENT AGREEMENT WAS SIGNED,  
16 CORRECT?

17 A. YES, THAT'S -- THAT SOUNDS ABOUT RIGHT.

18 Q. AND LET'S LOOK AT THE VERY -- THE VERY TOP  
19 SENTENCE THERE RIGHT BEFORE THE BIG IMAGE. IT SAYS:  
20 THE DOMINION IMAGECAST EVOLUTION LOOKS LIKE A PRETTY  
21 GOOD VOTING MACHINE. DO YOU SEE THAT?

22 A. YES.

23 Q. THEN WE HAVE TO GO UNDERNEATH THE IMAGE WITH A  
24 "BUT." BUT IT HAS A SERIOUS FLAW. AFTER YOU MARK YOUR  
25 BALLOT, AFTER YOU REVIEW YOUR BALLOT, THE VOTING MACHINE

1 CAN PRINT MORE VOTES ON IT!

2 DO YOU SEE THAT?

3 A. YES.

4 MR. MAAZEL: YOUR HONOR, IF THIS IS  
5 COMING IN FOR STATE OF MIND, SHOULDN'T WE FIRST  
6 ESTABLISH IF THE PLAINTIFFS OR DR. HALDERMAN HAD ANY  
7 KNOWLEDGE OF THIS ARTICLE?

8 THE COURT: NO.

9 BY MR. WIYGUL:

10 Q. AND THE NEXT SENTENCE: FORTUNATELY, THIS DESIGN  
11 FLAW HAS BEEN PATENTED BY A RIVAL COMPANY, ES&S, WHICH  
12 SUED TO PREVENT DOMINION FROM SELLING THIS BAD DESIGN.  
13 UNFORTUNATELY, THAT MEANS ES&S CAN STILL SELL MACHINES  
14 (SUCH AS THEIR EXPRESSVOTE ALL-IN-ONE) INCORPORATING  
15 THIS DESIGN MISTAKE.

16 DO YOU SEE THAT?

17 A. YES.

18 Q. OKAY. AND YOU WILL AGREE WITH ME THAT PEOPLE  
19 OFTEN REFER TO -- IN THE INDUSTRY AND CERTIFICATION  
20 DOCUMENTS REFER TO THE KINDS OF HYBRID MACHINES LIKE THE  
21 EXPRESSVOTE AND THE EXPRESSVOTE XL AS ALL-IN-ONE  
22 MACHINES?

23 A. YES.

24 THE COURT: MR. MAAZEL, HE IS OFFERING IT  
25 FOR WHAT THE STATE OF PUBLIC KNOWLEDGE WAS. YOUR CLIENT

1 SAID THAT HE DIDN'T THINK IT WAS IN THE PUBLIC DOMAIN.  
2 YOUR CLIENT'S OWN DESCRIPTION IS THAT THIS IS A LAY  
3 DOCUMENT. IT CERTAINLY GOES TO WHETHER OR NOT THESE  
4 CONCERNS WERE PUBLICLY AVAILABLE AND EXPRESSED AND  
5 ACCESSIBLE TO PEOPLE LIKE YOUR CLIENT.

6 GO AHEAD.

7 BY MR. WIYGUL:

8 Q. AND IF WE TURN THE PAGE -- TO PAGE 2, MORE  
9 DESCRIPTION OF THIS ISSUE. AND I WANT TO LOOK AT THE  
10 PARAGRAPH JUST UNDER THE IMAGE AGAIN ON PAGE 2, PLEASE.

11 A. YES.

12 Q. STARTING WITH "COMBINING THE BMD SCANNER." DO  
13 YOU SEE THAT?

14 A. YES.

15 Q. AND HE TALKS SPECIFICALLY ON -- FOUR SENTENCES  
16 INTO THAT, "FROM THE DIAGRAM OF THE PAPER PATH." DO YOU  
17 SEE THAT?

18 A. YES.

19 Q. FROM THE DIAGRAM OF THE PAPER PATH ABOVE, IT'S  
20 PRETTY CLEAR THAT THE SAME BIDIRECTIONAL PAPER PATH  
21 CONTAINS BOTH THE SCANNER AND THE PRINTER. THAT MEANS  
22 IT CAN CAST MORE VOTES ONTO YOUR BALLOT.

23 DO YOU SEE THAT?

24 A. YES.

25 Q. THAT'S THE -- THAT IS THE PAPER PATH ISSUE THAT

1 YOU POINT TO IN THE XL DESIGN, CORRECT?

2 A. YES, ESSENTIALLY.

3 Q. NEITHER YOU NOR ANY OTHER PLAINTIFFS'

4 REPRESENTATIVE TO YOUR KNOWLEDGE EVER CONTACTED THE

5 DEFENDANTS TO SAY, WAIT, YOU CAN'T CERTIFY THE

6 EXPRESSVOTE MACHINE BECAUSE OF THIS PAPER PATH ISSUE,

7 CORRECT?

8 A. I WAS WAITING TO WITNESS THE CERTIFICATION

9 TESTING.

10 THE COURT: IS THAT A YES OR A NO?

11 THE WITNESS: TO MY KNOWLEDGE, NO.

12 BY MR. WIYGUL:

13 Q. LET'S LOOK AT DX L, AS IN LARRY.

14 MR. WIYGUL: I WILL START BY MOVING THIS

15 INTO EVIDENCE, YOUR HONOR. THE PARTIES HAVE STIPULATED

16 TO AUTHENTICITY.

17 MR. MAAZEL: SAME REASONS, YOUR HONOR. I

18 OBJECT BOTH ON HEARSAY AND --

19 THE COURT: I THINK THE ONLY REASON YOU

20 OBJECTED WAS HEARSAY.

21 MR. MAAZEL: OBJECTION TO HEARSAY.

22 BY MR. WIYGUL:

23 Q. THIS IS ANOTHER ARTICLE IN FREEDOM TO TINKER,

24 CORRECT?

25 A. YES.

1 Q. BY DR. APPEL, CORRECT?

2 A. YES.

3 Q. THIS ONE COMES ABOUT A WEEK AFTER THE ONE WE  
4 JUST LOOKED AT.

5 A. YES.

6 Q. OCTOBER 22ND, RIGHT?

7 A. YES.

8 Q. NOW WE ARE TALKING FIVE WEEKS BEFORE THE  
9 SETTLEMENT AGREEMENT WAS SIGNED, CORRECT?

10 A. YES.

11 Q. ALL RIGHT. AND IN THIS ONE -- IN THIS ARTICLE  
12 BY DR. APPEL HE IS ESSENTIALLY REITERATING, MAYBE  
13 ELABORATING A BIT ON THE PAPER PATH ISSUE THAT HE  
14 DESCRIBED IN THE ARTICLE WE JUST LOOKED AT, CORRECT?

15 A. THAT'S RIGHT.

16 Q. HE SPECIFICALLY REFERS TO THE ES&S EXPRESSVOTE,  
17 CORRECT?

18 A. I SEE THAT IN HERE, YES.

19 Q. AND HE SAYS IN THE FIRST BULLET: ANY VOTING  
20 MACHINE WHOSE PHYSICAL HARDWARE CAN PRINT VOTES ONTO THE  
21 BALLOT AFTER THE LAST TIME THE VOTER SEES THE PAPER IS  
22 NOT A VOTER VERIFIED PAPER BALLOT SYSTEM, AND IS NOT  
23 ACCEPTABLE.

24 IS THAT WHAT HE SAYS?

25 A. YES, IT IS.



1 Q. WOULD IT BE FAIR TO SAY THAT THAT'S PRETTY MUCH  
2 A ONE-SENTENCE ENCAPSULATION OF A PORTION OF THE  
3 TESTIMONY THAT YOU GAVE DURING YOUR DIRECT EXAMINATION?

4 A. I SUPPOSE IT MIGHT BE.

5 Q. AND AGAIN, NOTHING WAS SAID TO DEFENDANTS TO  
6 YOUR KNOWLEDGE BEFORE THE SETTLEMENT AGREEMENT TO THE  
7 EFFECT OF THIS ISSUE MEANS EXPRESSVOTE MACHINES SHOULD  
8 NOT BE CERTIFIED.

9 A. TO MY KNOWLEDGE, NOTHING WAS SAID.

10 Q. NOW --

11 THE COURT: DID YOU SEE THIS AT THE TIME  
12 OF ITS PUBLICATION?

13 THE WITNESS: I HAVE SEEN THIS. I --  
14 PROBABLY SOME AMOUNT OF TIME AFTER THE PUBLICATION WHEN  
15 I NEXT RETURNED TO THE SITE.

16 THE COURT: AND THE PREVIOUS, THE ONE  
17 FROM -- THIS IS OCTOBER 22ND -- THE ONE FROM  
18 OCTOBER 16TH, DID YOU SEE THAT?

19 THE WITNESS: YES.

20 THE COURT: OKAY.

21 BY MR. WIYGUL:

22 Q. FOR THE BENEFIT OF EVERYONE I AM NEARLY  
23 CONCLUDED, DR. HALDERMAN, BUT CAN WE LOOK NOW -- FAST  
24 FORWARD IN TIME. THIS IS OCTOBER 2018 BEFORE THE  
25 SETTLEMENT AGREEMENT WAS SIGNED. LET'S NOW GO TO

1 MID-JULY 2019, WHICH IS SOME 10, 8, 9 MONTHS AFTER THE  
2 SETTLEMENT AGREEMENT HAS BEEN SIGNED. AND LOOK AT JX  
3 42, WHICH I BELIEVE IS ALREADY IN EVIDENCE.

4 THE COURT: I THINK THIS IS IN EVIDENCE,  
5 IS THAT RIGHT, MR. MAAZEL?

6 MR. MAAZEL: YES.

7 BY MR. WIYGUL:

8 Q. AND THIS IS A COPY OF THE PETITION FOR  
9 RE-EXAMINATION OF THE EXPRESSVOTE XL THAT WAS FILED ON  
10 THIS DATE, CORRECT?

11 A. YES.

12 Q. THIS WAS FILED BY -- WELL, IT WAS NOT FILED BY  
13 THE PLAINTIFFS, CORRECT?

14 A. THAT'S RIGHT. IT WASN'T BY THE PLAINTIFFS.

15 Q. IN FACT, IT WAS STIPULATED THAT THE FIRST TIME  
16 THE PLAINTIFFS RAISED AN OBJECTION ABOUT THE  
17 CERTIFICATION OF THE EXPRESSVOTE XL WAS JULY 29TH. YOU  
18 ARE AWARE OF THAT, CORRECT?

19 A. I AM AWARE OF THAT.

20 Q. LET'S LOOK AT -- IF WE SEE THERE IS A LETTER AND  
21 THEN THERE'S A PAGE THAT SAYS PETITION PAGES, AND THEN  
22 THERE'S THE ACTUAL PETITION. DO YOU SEE THAT?

23 A. YES.

24 Q. SO IT'S CAPTIONED "ATTACHMENT" AT THE TOP. DO  
25 YOU SEE THAT?

1 A. YES.

2 Q. AND IT PURPORTS TO IDENTIFY A NUMBER OF WHAT THE  
3 PETITIONERS DESCRIBED AS DEFICIENCIES OF THE EXPRESSVOTE  
4 XL, CORRECT?

5 A. YES.

6 Q. ACTUALLY IF YOU FLIP THROUGH HERE, I THINK THERE  
7 ARE TEN PURPORTED DEFICIENCIES, RIGHT?

8 A. YES.

9 Q. THE FIRST ONE IS ON PAGE 1. AND IF WE LOOK AT  
10 THE MIDDLE PARAGRAPH THERE UNDER THE BLOCK QUOTE, THE  
11 POLL QUOTE, IT'S TALKING ABOUT HOW THE EXPRESSVOTE XL  
12 EXPOSES -- NOW THEY ARE CALLING IT A BALLOT CARD, CAST  
13 BY THE VOTER TO AN INTERNAL PRINTER PRIOR TO TABULATION  
14 AND IMPOUNDMENT.

15 DO YOU SEE THAT?

16 A. YES.

17 Q. AND THEN THEY GO ON TO SAY: A MALFUNCTIONING OR  
18 MANIPULATING EXPRESSVOTE XL COULD ADD, MODIFY OR  
19 INVALIDATE VOTES AFTER THE VOTER HAS VIEWED, CONFIRMED  
20 AND CAST THEIR BALLOT. DO YOU SEE THAT?

21 A. YES.

22 Q. THIS IS THE SAME ISSUE THAT YOU WERE TALKING  
23 ABOUT IN YOUR DIRECT TESTIMONY, CORRECT?

24 A. YES.

25 Q. IN FACT, THESE PETITIONERS HAVE A FOOTNOTE

1 CITATION TO THIS ISSUE, REFERRING TO THIS ISSUE, AND  
2 THEY SPECIFICALLY CITE, AMONG OTHER THINGS, THE TWO  
3 FREEDOM TO TINKER ARTICLES THAT WE JUST LOOKED AT,  
4 CORRECT?

5 A. YES, I SEE THAT.

6 Q. NOW, INTERESTINGLY ENOUGH, IF WE LOOK AT THE  
7 LAST PAGE OF THIS PETITION, THERE IS A DEFICIENCY THAT  
8 -- ALLEGED DEFICIENCY WITH THE EXPRESSVOTE XL THAT  
9 PETITIONERS SAY VIOLATES THE STEIN SETTLEMENT. THAT'S  
10 THE SETTLEMENT WE ARE TALKING ABOUT, RIGHT?

11 A. YOU ARE REFERRING TO -- I SEE.

12 Q. LET ME --

13 A. YES, I SEE THAT. YES.

14 Q. SO THEY ACTUALLY HIGHLIGHT AN ISSUE THAT IN  
15 PETITIONERS' VIEW WAS A VIOLATION OF THE SETTLEMENT  
16 AGREEMENT WE ARE HERE TO TALK ABOUT TODAY, CORRECT?

17 A. THEY DO.

18 Q. THAT ISSUE THAT THEY SAY VIOLATES THE STEIN  
19 SETTLEMENT IS NOT THE PRINthead ISSUE THAT WE HAVE JUST  
20 BEEN DISCUSSING, CORRECT? IT'S A DIFFERENT ISSUE.

21 A. THAT'S RIGHT. THAT'S A DIFFERENT ISSUE.

22 Q. AND WHEN PETITIONERS HERE TALKED ABOUT WHAT I AM  
23 REFERRING TO AS THE PRINthead ISSUE, THEIR ISSUE NUMBER  
24 1, ON PAGE 1 OF 12, THEY DON'T ALLEGE THAT THAT ISSUE IS  
25 A VIOLATION OF THE STEIN SETTLEMENT, DO THEY?

1 A. I DON'T BELIEVE THEY DO, NO.

2 Q. NOW, PLAINTIFFS SENT THEIR JULY 29, 2019 LETTER,  
3 THAT WOULD BE APPROXIMATELY TWO WEEKS AFTER THIS  
4 PETITION WAS FILED, CORRECT?

5 A. I THINK THAT'S RIGHT.

6 Q. AND WHEN PLAINTIFFS SENT THEIR JULY 29TH LETTER,  
7 THEY KNEW ABOUT THE PETITION FOR RE-EXAMINATION, RIGHT?

8 MR. MAAZEL: OBJECTION.

9 THE COURT: IF HE KNOWS.

10 THE WITNESS: I THINK SO, YES.

11 MR. WIYGUL: WILL COUNSEL STIPULATE TO  
12 THAT FACT?

13 THE COURT: WHAT FACT?

14 MR. WIYGUL: THE FACT THAT AT THE TIME  
15 PLAINTIFFS SUBMITTED THEIR JULY 29TH COMPLAINT TO THE  
16 DEFENDANTS, THEY, THE PLAINTIFFS, WERE AWARE OF THE  
17 PETITION FOR REEXAMINATION?

18 MR. MAAZEL: I THINK YOU NEED TO EXAMINE  
19 THE WITNESS.

20 MR. WIYGUL: WELL, I REFER TO YOUR  
21 OPENING BRIEF IN THIS MATTER, MR. MAAZEL. IT SAYS ON  
22 PAGE 3, QUOTE: AWARE THAT THE REQUEST FOR REEXAMINATION  
23 WAS PENDING ON JULY 29, 2019, PLAINTIFFS NOTIFIED THE  
24 DEFENDANTS, ET CETERA, ET CETERA.

25 MR. MAAZEL: IN THAT CASE, WE WILL

1 STIPULATE.

2 MR. WIYGUL: THANK YOU FOR THE  
3 ACCOMMODATION.

4 BY MR. WIYGUL:

5 Q. DESPITE THE FACT THAT, AS HAS NOW BEEN  
6 STIPULATED, PLAINTIFFS KNEW ABOUT THE PETITION FOR  
7 RE-EXAMINATION, WHICH LISTS THE PRINTHEAD ISSUE, AS WE  
8 HAVE SEEN, THEIR JULY 29TH LETTER, WHICH WE CAN PULL UP,  
9 WHICH IS JX 43, DID NOT IDENTIFY THE PRINTHEAD ISSUE AS  
10 A VIOLATION OF THE SETTLEMENT AGREEMENT, DID IT?

11 A. NO, IT DIDN'T.

12 Q. IT DIDN'T MENTION THE PRINTHEAD ISSUE AT ALL,  
13 DID IT?

14 A. NO, IT DIDN'T.

15 Q. OKAY. AND THAT LETTER ALSO DIDN'T ASSERT THAT  
16 THE XL CERTIFICATION WAS A VIOLATION OF THE SETTLEMENT  
17 AGREEMENT BECAUSE THE XL PAPER RECORDS SHOULD NOT BE  
18 CONSIDERED PAPER BALLOTS WITHIN THE MEANING OF THE  
19 SETTLEMENT AGREEMENT, ISN'T THAT RIGHT? DOESN'T MENTION  
20 THAT EITHER.

21 A. NO. WE HAVE ALREADY ESTABLISHED ONLY AS TO THE  
22 ONE POINT.

23 Q. NOTWITHSTANDING THE FACT THAT PLAINTIFFS HAD  
24 BEEN, TO USE MR. MAAZEL'S TERMS, WATCHING CLOSELY TO  
25 ENSURE THAT THE SETTLEMENT AGREEMENT WAS COMPLIED WITH,

1 IS THAT RIGHT?

2 MR. MAAZEL: OBJECTION.

3 THE COURT: YOU ARE MAKING ARGUMENT  
4 THROUGH THE WITNESS. WHY DON'T YOU MOVE ON.

5 MR. WIYGUL: IF I CAN JUST HAVE ONE  
6 MOMENT, YOUR HONOR.

7 THE COURT: SURE.

8 (PAUSE.)

9 MR. WIYGUL: NO FURTHER QUESTIONS, YOUR  
10 HONOR.

11 THE COURT: VERY WELL.

12 MR. WIYGUL: AND I APOLOGIZE FOR MY  
13 TERRIBLE TIME ESTIMATE.

14 THE COURT: LAWYER TIME. I UNDERSTAND  
15 IT.

16 REDIRECT EXAMINATION

17 BY MR. MAAZEL:

18 Q. TO YOUR KNOWLEDGE, DR. HALDERMAN, DOES THIS --  
19 DOES JENNIFER COHN HAVE ANY EXPERTISE IN VOTING SYSTEMS,  
20 AS FAR AS YOU KNOW?

21 A. I DON'T BELIEVE SO.

22 Q. ALL OF THOSE TWEETS OR WHATEVER THOSE WERE THAT  
23 COUNSEL SHOWED YOU, DID YOU SEE ANY OF THOSE TWEETS?

24 A. NO, NOT BEFORE WE WERE PREPARING FOR THE HEARING  
25 TODAY.

1 Q. OKAY. DO YOU HAVE ANY EVIDENCE THAT ANY OF THE  
2 PLAINTIFFS EVER SAW ANY OF THESE TWEETS BY THIS PERSON  
3 NAMED JENNIFER COHN?

4 A. NO.

5 Q. DO YOU HAVE ANY IDEA HOW MANY HUNDREDS OR  
6 THOUSANDS OF REPLIES JILL STEIN GETS WHEN SHE SENDS OUT  
7 A TWEET?

8 A. NO, I HAVE NO IDEA.

9 Q. YOU WERE ASKED ABOUT A PILOT RISK-LIMITING AUDIT  
10 THAT OCCURRED IN PHILADELPHIA IN 2019. DO YOU REMEMBER  
11 THAT QUESTION?

12 A. YES.

13 Q. AND THAT WAS A CONNECTION WITH THE XL BEING  
14 USED, YES?

15 A. YES.

16 Q. AND I BELIEVE COUNSEL POINTED OUT THAT THE XL  
17 NOW HAS BEEN USED AT LEAST A COUPLE OF TIMES IN A COUPLE  
18 OF PLACES.

19 A. THAT'S RIGHT.

20 Q. AND THAT PARTICULAR PILOT AUDIT IN PHILADELPHIA,  
21 THAT OCCURRED IN AN OFF-YEAR MUNICIPAL ELECTION, IS THAT  
22 RIGHT?

23 A. I BELIEVE SO, YES.

24 Q. SO OTHER THAN THAT ONE PILOT RISK-LIMITING AUDIT  
25 IN A SINGLE JURISDICTION IN AN OFF-YEAR MUNICIPAL



1 ELECTION, ARE YOU AWARE OF ANY RISK-LIMITING AUDITS THAT  
2 HAVE EVER BEEN DONE FOR THE EXPRESSVOTE XL?

3 A. I DON'T THINK I AM AWARE OF OTHERS, NO.

4 Q. OKAY.

5 A. I'M NOT AWARE OF OTHERS.

6 Q. AS AN EXPERT IN ELECTION SECURITY, IS A SINGLE  
7 PILOT AUDIT IN AN OFF-YEAR ELECTION IN A SINGLE  
8 JURISDICTION A SUFFICIENT BASIS IN EVIDENCE TO CONCLUDE  
9 THAT MALWARE CAN AFFECT THE XL?

10 A. NO, OF COURSE NOT.

11 Q. WHY NOT?

12 A. BECAUSE WHETHER -- EVEN IF AN AUDIT COULD SHOW  
13 ERRORS IF THEY HAVE OCCURRED, THE QUESTION IS WHETHER  
14 ANYONE HAS TRIED TO ATTACK THE MACHINE IN A WAY THAT  
15 WOULD INDUCE THOSE ERRORS. AND IN AN OFF-YEAR ELECTION  
16 I THINK THE ODDS THAT A SOPHISTICATED ATTACKER LIKE A  
17 FOREIGN COUNTRY WOULD WANT TO HACK THE MACHINE ARE  
18 PRETTY LOW.

19 MR. WIYGUL: OBJECTION, SPECULATIVE.

20 THE COURT: I WILL OVERRULE IT.

21 BY MR. MAAZEL:

22 Q. AND I JUST WANTED TO FOLLOW UP ON A QUESTION  
23 THAT JUDGE DIAMOND ASKED YOU EARLIER, WHICH IS HOW CAN  
24 MALWARE INFECT THESE MACHINES. AND I BELIEVE YOU  
25 TESTIFIED THAT THERE WERE AT LEAST THREE TIMES WHEN THAT

1       COULD HAPPEN. ONE WAS IN THE MANUFACTURING STAGE; ONE  
2       WAS AT THE PROGRAMMING STAGE; AND ONE WAS AT THE  
3       PHYSICAL POLLING PLACE. IS THAT WHAT YOU TESTIFIED TO?

4       A.       THAT'S WHAT I TESTIFIED.

5       Q.       WHEN YOU WERE REFERRING TO MALWARE IN THE  
6       MANUFACTURING STAGE, CAN YOU JUST EXPLAIN THAT?

7       A.       SURE. THE SOFTWARE THAT IS RUNNING ON THE  
8       DEVICES IS LOADED AT THE FACTORY OR BEFORE THE MACHINES  
9       ARE DELIVERED, AND AN ATTACKER WHO WAS ABLE TO  
10      COMPROMISE SOME STAGE OF THE SUPPLY CHAIN COULD BE ABLE  
11      TO CHANGE THAT SOFTWARE BEFORE THE MACHINES ARE USED FOR  
12      THE FIRST TIME IN PENNSYLVANIA.

13     Q.       AND IN SUCH A CASE, WHAT PERCENTAGE OF MACHINES  
14     COULD BE AFFECTED?

15     A.       POTENTIALLY ALL OF THEM.

16               MR. WIYGUL: OBJECTION.

17               THE COURT: NO. I THINK THIS IS REALLY  
18     THE HEIGHT OF SPECULATION, BUT I WILL OVERRULE THE  
19     OBJECTION.

20     BY MR. MAAZEL:

21     Q.       ALL RIGHT. AND YOU ALSO SAID THAT THE  
22     PROGRAMMING --

23               THE COURT: DO YOU KNOW ANYTHING AT ALL  
24     ABOUT SECURITY ARRANGEMENTS? WHAT IS THE COMPANY, THE  
25     -- I WILL CALL IT THE ES&S COMPANY -- DO YOU HAVE ANY

1 KNOWLEDGE AT ALL OF THEIR SECURITY ARRANGEMENTS?

2 THE WITNESS: YES, I DO HAVE SOME  
3 KNOWLEDGE.

4 THE COURT: BECAUSE THEY LET YOU IN?

5 THE WITNESS: FOR BETTER OR FOR WORSE.

6 THE COURT: YES. WHEN YOU ARE NOT THERE,  
7 AT NIGHT, DO YOU HAVE ANY KNOWLEDGE AT ALL OF WHAT THEIR  
8 SECURITY ARRANGEMENTS ARE?

9 THE WITNESS: I AM SORRY, YOUR HONOR?

10 THE COURT: DO YOU KNOW WHAT THE SECURITY  
11 -- YOU SAY IN THE MANUFACTURING PROCESS. DO YOU KNOW  
12 WHAT THE SECURITY ARRANGEMENTS ARE DURING THE  
13 MANUFACTURING PROCESS?

14 THE WITNESS: I WOULD HAVE TO SPECULATE.

15 THE COURT: WELL, THAT HAS NOT STOPPED  
16 YOU BEFORE, HAS IT? YOUR ANSWER IS NO, ISN'T THAT  
17 RIGHT?

18 THE WITNESS: DO I HAVE ANY KNOWLEDGE AT  
19 ALL? ALL RIGHT. NO.

20 THE COURT: ALL RIGHT.

21 BY MR. MAAZEL:

22 Q. AND YOU ALSO TESTIFIED THAT THE ES&S -- I'M  
23 SORRY. YOU ALSO TESTIFIED THAT MACHINES COULD BE  
24 INFECTED AT THE PROGRAMMING STAGE. COULD YOU EXPLAIN  
25 WHAT YOU MEAN BY THAT?

1 MR. WIYGUL: OBJECTION.

2 THE COURT: OVERRULED.

3 THE WITNESS: ALL RIGHT. SO DURING THE  
4 LEAD-UP TO EVERY ELECTION, ELECTION WORKERS HAVE TO  
5 INSTALL THE -- WHAT'S SOMETIMES CALLED BALLOT  
6 PROGRAMMING ONTO EVERY ONE OF THE EXPRESSVOTE MACHINES.  
7 THIS IS INFORMATION ABOUT WHO IS ON THE BALLOT, HOW THE  
8 BALLOT SHOULD BE COUNTED, THE CONFIGURATION FOR THE  
9 MACHINE. THAT IS PREPARED AT SOME CENTRAL LOCATION,  
10 DEPENDING ON THE JURISDICTION, EITHER BY THE  
11 JURISDICTION OR BY ES&S. THAT BALLOT PROGRAMMING IS  
12 COPIED TO THE INDIVIDUAL MACHINES ON A REMOVABLE MEMORY  
13 DEVICE. I THINK IT'S A USB STICK FOR THE XL'S. IT IS  
14 POSSIBLE THAT BY TAMPERING WITH THAT BALLOT PROGRAMMING,  
15 AN ATTACKER COULD CAUSE MALWARE TO INFECT THE MACHINES.  
16 Q. YOU WERE ASKED BY COUNSEL ABOUT YOUR STATE OF  
17 KNOWLEDGE OF VARIOUS POSTINGS BY OTHER PEOPLE. DO YOU  
18 REMEMBER THOSE QUESTIONS?

19 A. YES.

20 Q. SO LET ME ASK YOU ABOUT YOUR STATE OF KNOWLEDGE  
21 ABOUT OTHER EXPERTS IN THE FIELD. ARE YOU THE ONLY  
22 ELECTION EXPERT THAT BELIEVES THAT VOTING SYSTEMS CAN BE  
23 HACKED?

24 MR. WIYGUL: OBJECTION.

25 THE COURT: OVERRULED.

1 THE WITNESS: NO, ABSOLUTELY NOT. IT'S  
2 NOT JUST MY OPINION. THIS IS THE CONSENSUS VIEW OF THE  
3 NATIONAL ACADEMIES.

4 BY MR. MAAZEL:

5 Q. THE NATIONAL ACADEMIES OF WHAT?

6 A. SCIENCE, ENGINEERING AND MEDICINE.

7 Q. AND I TAKE IT THAT ONE OF THE REASONS -- WELL,  
8 WITHDRAWN.

9 AND IS IT FAIR THAT A PRIMARY REASON WHY  
10 THERE ARE AUDITS IN THE FIRST PLACE IS BECAUSE MALWARE  
11 CAN INFECT MACHINES?

12 A. THAT'S RIGHT. IF WE COULD MAKE VOTING MACHINES  
13 THAT COULD NOT BE HACKED, WE WOULD NOT NEED TO HAVE A  
14 PAPER TRAIL AND AUDITS TO CONFIRM THAT THEY WERE WORKING  
15 PROPERLY.

16 MR. MAAZEL: I HAVE NO FURTHER QUESTIONS,  
17 YOUR HONOR.

18 MR. WIYGUL: NOTHING FURTHER, YOUR HONOR.

19 THE COURT: VERY WELL. WE WILL BREAK FOR  
20 LUNCH.

21 MR. ARONCHICK: IF THIS IS ACCEPTABLE TO  
22 MY COLLEAGUES AND YOU, MR. BAUMERT, WE WOULD BE CALLING  
23 IN OUR CASE IS SCHEDULED. HE STAYED HERE OVERNIGHT. HE  
24 IS SCHEDULED TO GO BACK LATER ON. IF IT'S ACCEPTABLE,  
25 RATHER THAN GO TO MS. KOTULA AND FINISH HER AND THEN THE

1 REST OF HIS WITNESSES, COULD WE TAKE MR. BAUMERT OUT OF  
2 TURN?

3 THE COURT: DO YOU HAVE A PROBLEM WITH  
4 THAT?

5 MR. MAAZEL: OF COURSE NOT, YOUR HONOR.

6 THE COURT: AND I DON'T EITHER. THAT'S  
7 CERTAINLY OKAY. THANK YOU.

8 (LUNCHEON RECESS TAKEN.)

9 THE COURT: PLEASE BE SEATED, EVERYBODY.  
10 GOOD AFTERNOON.

11 ALL COUNSEL: GOOD AFTERNOON.

12 THE COURT: MR. WIYGUL.

13 MR. WIYGUL: YOUR HONOR, AT THIS POINT WE  
14 ARE PREPARED TO CALL MR. DEAN BAUMERT FROM ES&S TO GIVE  
15 TESTIMONY, AND OUR THOUGHT WAS THAT MR. BAUMERT COULD  
16 DEMONSTRATE THE MACHINE IF IT PLEASES THE COURT. AND  
17 THE QUESTION I WOULD POSE TO THE COURT IS HOW MUCH OF  
18 THE MACHINE SETUP PRIOR TO THE ACTUAL VOTER EXPERIENCE  
19 PART OF THE DEMONSTRATION DOES THE COURT WANT ON THE  
20 RECORD? AND I ASK BECAUSE --

21 THE COURT: MR. MAAZEL WANTED TO PRESENT  
22 WITNESSES. HE HAS MADE A NUMBER OF CHALLENGES TO THE  
23 MACHINE. HE WANTED TO CALL FRUSTRATED VOTERS WHO HAD  
24 DIFFICULTY WITH THE MACHINE AND THEY DESCRIBED THEIR  
25 DIFFICULTIES. AND SO I WANTED TO SEE HOW THE MACHINE

1 WORKS TO ADDRESS THOSE PROBLEMS AND GENERALLY TO  
2 UNDERSTAND HOW THE MACHINE WORKS AND WHAT A VOTER SEES  
3 WHEN SHE WALKS INTO THE POLLING PLACE, WHAT A VOTER  
4 DOES, HOW THE MACHINE IS PUT TOGETHER. IF HE COULD  
5 ADDRESS -- I MEAN, DR. HALDERMAN TALKED ABOUT HACKING.  
6 I HEAR A LOT ABOUT THAT EVERYWHERE. YOU CAN'T BLOW  
7 SMOKE INTO THE MACHINE'S EAR. WHAT WOULD ONE HAVE TO  
8 DO? MANY OF THESE THINGS WERE ADDRESSED BY THE DOCTOR  
9 WHOSE NAME I DON'T REMEMBER WHO TESTIFIED FOR THE  
10 COMMONWEALTH, THE OPPOSING EXPERT. WOULD YOU HAPPEN TO  
11 REMEMBER HIS NAME?

12 MR. MAAZEL: DR. SHAMOS.

13 THE COURT: SHAMOS, RIGHT. WITH RESPECT  
14 TO DIFFERENT MACHINES, THE DRE MACHINES. AND HE HELD --  
15 AS I RECALL, HE HAD WRITTEN SOME OF THE SECURITY  
16 REQUIREMENTS. TO THE EXTENT THAT MR. BAUMERT COULD  
17 ADDRESS THAT AS WELL, I WOULD BE GRATEFUL. AND I WANT  
18 TO LOOK AT THE MACHINE. SO I WILL COME DOWN AND COMMUNE  
19 WITH THE MACHINE AT THE APPROPRIATE TIME.

20 MR. WIYGUL: I GUESS THE QUESTION THAT I  
21 HAVE FOR YOU, YOUR HONOR, IS THAT THERE IS A PROLOGUE TO  
22 THE VOTER EXPERIENCE WHERE THE SEALS WILL BE BROKEN AND  
23 THE COVER WILL BE TAKEN OFF AND TURNED ON AND SET UP.  
24 MY UNDERSTANDING IS THAT PROCESS TAKES ABOUT FIVE  
25 MINUTES. THE VOTER DOES NOT SEE ANY OF THAT HAPPEN.

1 THE COURT: NO. BUT THAT ADDRESSES THE  
2 SECURITY CONCERNS THAT I RAISED WITH DR. HALDERMAN.

3 MR. WIYGUL: WE CAN PUT THAT ON THE  
4 RECORD.

5 THE COURT: ABSOLUTELY.

6 MR. WIYGUL: MR. BAUMERT CAN COME UP.

7 THE COURT: WE CAN PUT IT ALL ON THE  
8 RECORD.

9 MR. WIYGUL: VERY GOOD.

10 WITH THAT, YOUR HONOR, IF IT PLEASE THE  
11 COURT, WE WOULD CALL DEAN BAUMERT TO THE STAND.

12 (DEAN BAUMERT, PLAINTIFF WITNESS SWORN.)

13 THE CLERK: PLEASE STATE AND SPELL YOUR  
14 NAME FOR THE RECORD.

15 THE WITNESS: IT IS DEAN BAUMERT.

16 D-E-A-N. B, AS IN BOY, A-U M, AS IN MARY, E-R-T.

17 THE COURT: PLEASE BE SEATED.

18 DIRECT EXAMINATION

19 BY MR. WIYGUL:

20 Q. GOOD AFTERNOON, MR. BAUMERT.

21 A. GOOD AFTERNOON.

22 Q. HOW ARE YOU CURRENTLY EMPLOYED, SIR?

23 A. I AM EMPLOYED AS A PRODUCT MANAGER FOR ELECTION  
24 SYSTEMS AND SOFTWARE, ALSO KNOWN AS ES&S.

25 Q. WHEN DID YOU FIRST JOIN ES&S?



1 A. IT WAS IN SEPTEMBER OF 2007, SO I HAVE BEEN WITH  
2 THEM ABOUT 12-AND-A-HALF YEARS.

3 Q. YOUR CURRENT ROLE IS THE PRINCIPAL PRODUCT  
4 MANAGER?

5 A. THAT IS CORRECT.

6 Q. WHAT ARE YOUR -- GENERALLY SPEAKING, YOUR  
7 RESPONSIBILITIES IN THAT ROLE?

8 A. I HAVE SOME SPECIFIC RESPONSIBILITIES AND SOME  
9 BROADER ONES. SOME OF THE MORE SPECIFIC ONES IS, I AM  
10 THE PRODUCT MANAGER RESPONSIBLE FOR ALL TOUCHSCREEN  
11 VOTING SYSTEMS, WHETHER THEY -- SO ANYTHING THAT ALLOWS  
12 YOU TO MAKE VOTE SELECTIONS AND CAST VOTES. SO I AM THE  
13 PRODUCT MANAGER FOR THOSE TOUCHSCREEN SYSTEMS, AND I AM  
14 ALSO, JUST KIND OF A BROADER -- I HAVE EXPERIENCE WITH A  
15 NUMBER OF THE SYSTEMS. SO I DO SOME WORK WITH  
16 UNDERSTANDING STANDARDS AND JUST GENERAL PRODUCT MANAGER  
17 DUTIES.

18 Q. AND COULD YOU BE A LITTLE BIT MORE GRANULAR -- I  
19 THINK IS THE WORD OF THE DAY -- COULD YOU BE MORE  
20 GRANULAR ABOUT WHAT YOU ARE -- YOU SAY YOU HAVE  
21 RESPONSIBILITIES AS PRODUCT MANAGER FOR THE SYSTEMS.  
22 WHAT EXACTLY ARE THOSE RESPONSIBILITIES?

23 A. YEAH. THERE'S PROBABLY TWO THINGS. SO ONE  
24 THING IS, I AM -- I HAVE BEEN TASKED A NUMBER OF TIMES  
25 IN MY TIME WITH ES&S TO TAKE A CONCEPT AND DRIVE IT ALL

1 THE WAY FROM AN IDEA FOR A PRODUCT ALL THE WAY TO A  
2 PRODUCT THAT IS MARKETED AND SOLD. SO I MANAGE BRINGING  
3 IN THE REQUIREMENTS IN ALL THE DIFFERENT AREAS OF THE  
4 SYSTEM THAT USE CASE MODELS, YOU KNOW, SECURITY,  
5 USABILITY, AND I BRING THOSE ALL TOGETHER AND I LEAD THE  
6 DEVELOPMENT, MAKING SURE THAT AS IT'S DEVELOPED IT MEETS  
7 THOSE REQUIREMENTS AND THAT IT'S A PRODUCT THAT OUR  
8 CUSTOMERS WANT TO BUY.

9 THE COURT: WHILE I STILL HAVE THIS IN MY  
10 HEAD AND I DON'T THINK THIS IS THE WITNESS TO TESTIFY TO  
11 IT, BUT THE REQUEST IS THAT I ORDER THE SECRETARY TO  
12 DECERTIFY THESE MACHINES. I WOULD LIKE TO HEAR  
13 EVIDENCE, AND IT SEEMS TO ME IT SHOULD BE BY  
14 STIPULATION, AND I DON'T THINK IT INVOLVES ANY  
15 PROPRIETARY ANYTHING, WHAT THE CITY SPENT ON THESE  
16 MACHINES, WHAT THEIR REPLACEMENT WOULD COST WITH  
17 WHATEVER OTHER MACHINES, AND IF ALL THAT HAS TO BE DONE  
18 IS IT HAS TO BE REPROGRAMMED, WHATEVER THAT MEANS, WHAT  
19 THE COST OF THAT WOULD BE, WHAT THE TIME REQUIRED WOULD  
20 BE AND EXACTLY HOW IT WOULD HAVE TO BE DONE. OKAY?

21 MR. WIYGUL: YES, THANK YOU, YOUR HONOR.  
22 I AGREE THIS IS PROBABLY NOT THE WITNESS.

23 THE COURT: NO. THIS IS NOT THE WITNESS.  
24 AS I HEAR HIM TESTIFY TO PRODUCT DEVELOPMENT AND SO  
25 FORTH, HE CAN PROBABLY ANSWER SOME OF THOSE QUESTIONS,

1 BUT HE IS REALLY NOT THE WITNESS TO DO IT. IT DOES SEEM  
2 TO ME THAT AT LEAST SOME OF THIS, FOR INSTANCE, WHAT THE  
3 CITY PAID, IT'S PUBLIC KNOWLEDGE, I WOULD THINK, AND  
4 THAT COULD BE STIPULATED TO. WHAT REPLACEMENT MACHINES  
5 WOULD COST, ONLY AN ESTIMATE BECAUSE IT'S THE LOWEST  
6 RESPONSIBLE BIDDER PROCESS. I UNDERSTAND THAT, BUT AT  
7 LEAST SOME ROUGH COMPARISON IF IT CAN BE DONE.  
8 DISCLOSING WHAT WAS IN THE COMPETING BIDS MAY NOT BE  
9 ALLOWABLE. I UNDERSTAND THAT. BUT THESE ARE SOME OF  
10 THE THINGS IT SEEMS TO ME I HAVE TO THINK ABOUT. THE  
11 GRANTING OF RELIEF. YOU TALK ABOUT FEDERALISM IN A  
12 FEDERAL COURT, THAT IT'S SOMEHOW UNSEEMLY AND I  
13 UNDERSTAND YOUR ARGUMENT FOR THE FEDERAL COURT TO TELL  
14 THE CITY HOW TO RUN ITS ELECTIONS, BUT IT'S ALSO A  
15 QUESTION OF I PRESUMABLY TELL THE CITY HOW TO SPEND ITS  
16 MONEY AND I JUST WANT TO KNOW HOW MUCH.

17 BY MR. WIYGUL:

18 Q. ALL RIGHT. MR. BAUMERT, OTHER THAN YOUR CURRENT  
19 POSITION AS PRINCIPAL PRODUCT MANAGER, HAVE YOU HELD  
20 OTHER POSITIONS AT ES&S?

21 A. I HAVE.

22 Q. WHAT ARE THOSE?

23 A. JUST KIND OF GO THROUGH MY WORK TIMELINE WITH  
24 ES&S. I STARTED WITH ES&S AS A TITLE OF SENIOR PROJECT  
25 MANAGER CONSULTANT. IT'S A SENIOR LEVEL PROJECT

1 CONSULTANT. I WAS BROUGHT IN TO PROJECT MANAGE THE  
2 DEVELOPMENT OF VOTING MACHINES, HARDWARE TYPE MACHINES.  
3 SO FIRST PROJECT ACTUALLY SPENT SOME TIME WORKING ON THE  
4 FEASIBILITY OF A DRE REPLACEMENT TO BE USED IN  
5 INTERNATIONAL MARKETS. I THEN -- WHEN WE DECIDED --  
6 CHOSE NOT TO DO THAT, I THEN LED AS A PROJECT MANAGER  
7 THE DEVELOPMENT OF THE ELECTION SYSTEMS AND SOFTWARES'  
8 DS850 HIGH SPEED CENTRAL SCANNER. SO -- AGAIN, FROM  
9 CONCEPT, PROTOTYPING, DESIGN, DEVELOPMENT, TESTING,  
10 CERTIFICATION, FIRST USES, ALL THAT.

11 FROM THERE I WAS BOTH A PROJECT MANAGER  
12 AND PRODUCT MANAGER FOR SOME DEVELOPMENT AROUND OUR  
13 PRECINCT SCANNERS. I WAS THEN THE FULL PRODUCT MANAGER  
14 FOR OUR BALLOT TABULATION SYSTEMS, SO OUR DS LINE  
15 HIGH-SPEED SCANNER AND PRECINCT SCANNER.

16 AND I THEN WENT AND PROJECT MANAGED THE  
17 DEVELOPMENT OF THE ORIGINAL EXPRESSVOTE, SO WHAT WE'VE  
18 REFERRED AS THE 1.0.

19 AFTER THAT I LAUNCHED THE DEVELOPMENT OF  
20 OUR MIDRANGE CENTRAL SCANNER FOR THE COMPANY.

21 I THEN, AFTER THAT, WAS A PRODUCT MANAGER  
22 IN CHARGE OF THE DS SYSTEMS, AND THEN AS MY CURRENT ROLE  
23 I DID -- I WAS THE PRODUCT MANAGER FOR THE EXPRESSVOTES  
24 AND THEN WORKED AS THE PRODUCT MANAGER TO DEVELOP THE  
25 EXPRESS TOUCH DRE AND THE EXPRESSVOTE XL.

1                   AND THAT KIND OF BRINGS US -- SO I AM  
2           CURRENTLY RESPONSIBLE FOR BOTH EXPRESSVOTES, THE 1.0 AND  
3           THE 2.1, THE EXPRESSVOTE XL, AND THE EXPRESS TOUCH DRE.

4                   THE COURT:   BACK UP A SECOND.   AND IF ANY  
5           OF THIS IS NOT PUBLICLY AVAILABLE INFORMATION, IT'S NOT  
6           IMPORTANT ENOUGH TO MY DECISION TO COMPEL ITS  
7           DISCLOSURE.

8           BY THE COURT:

9           Q.           WHAT DOES ES&S STAND FOR?

10          A.           ES&S?

11          Q.           IS THAT YOUR EMPLOYER?

12          A.           YEAH.   ELECTION SYSTEMS AND SOFTWARE, YES.

13          Q.           IS IT A PUBLICLY-TRADED COMPANY OR IS IT  
14          PRIVATELY HELD?

15          A.           IT IS PRIVATELY HELD.   I DON'T KNOW IF IT WOULD  
16          BE WE CONSIDERED CLOSELY HELD.

17          Q.           PRIVATELY HELD?

18          A.           YES.

19          Q.           IS IT PUBLIC INFORMATION HOW BIG THE COMPANY IS?

20          A.           IT IS, YES.

21          Q.           HOW BIG IS THE COMPANY?

22          A.           APPROXIMATELY 500 PEOPLE.

23          Q.           AND IS ITS SOLE BUSINESS THE DESIGN,  
24          MANUFACTURE, DISTRIBUTION OF VOTING MACHINES AND  
25          EVERYTHING THAT GOES ALONG WITH VOTING MACHINES?

1       A.           YES.    KIND OF SOUP TO NUTS.   EVERYTHING -- MOST  
2       EVERYTHING INVOLVED WITH VOTING.   THERE'S A FEW LITTLE  
3       SIDE AREAS THAT WE DON'T DO, BUT ELECTRONIC POLL VOTES,  
4       VOTER REGISTRATION, BALLOT PRINTING, CODING SERVICES,  
5       SOUP TO NUTS.

6       Q.           YOUR ENTIRE BUSINESS IS VOTING.

7       A.           AND ONLY VOTING -- AND ONLY ELECTIONS.

8       Q.           OKAY.   AND HOW LONG HAS IT BEEN IN EXISTENCE?

9       A.           IN ITS CURRENT FORM IT WAS -- ES&S IS THE  
10      FORMATION OF A COMPANY -- FROM A COMPANY CALLED AMERICAN  
11      INFORMATION SERVICES AND BUSINESS RECORDS, THE ELECTION  
12      DIVISION OF BUSINESS RECORDS CORPORATION.   THOSE TWO  
13      DIFFERENT COMPANIES HAVE BEEN AROUND SINCE THE EARLY  
14      '70S.   WHEN THEY MERGED, THAT BECAME ELECTION SYSTEMS  
15      AND SOFTWARE BY 1998.

16     Q.           AND THE COMPANY, ES&S -- I WILL REFER TO AS THE  
17     COMPANY.   THE COMPANY DOES BUSINESS WITH HOW MANY  
18     ENTITIES?   I ASSUME IN SOME INSTANCES -- WELL, IN  
19     PENNSYLVANIA, IT'S PENNSYLVANIA THAT CERTIFIES THE  
20     MACHINES, BUT THE MUNICIPALITIES PURCHASE THE MACHINES.  
21     SO I WILL JUST SAY, HOW MANY ENTITIES -- HOW MANY  
22     CUSTOMERS DOES THE COMPANY HAVE?

23     A.           THOUSANDS.   I THINK I WOULD HAVE TO LOOK AT MY  
24     -- LOOK AT MY --

25     Q.           THESE ARE ALL GOVERNMENTAL ENTITIES?

1 A. YES. SO THEY WOULD BE -- IN SOME CASES IT IS A  
2 STATE OR A COMMONWEALTH, SO IF WE HAVE A STATEWIDE DEAL.  
3 IN MANY CASES THEY ARE COUNTIES. IN SOME PLACES THEY  
4 ARE CITIES, SO NEW YORK CITY IS A CUSTOMER. AND SO  
5 GENERALLY CITIES, COUNTIES, STATES, AND ABOUT 40 SOME  
6 STATES. THOUSANDS OF CLIENTS.

7 Q. ANY FOREIGN COUNTRIES?

8 A. WE DO A SIGNIFICANT BUSINESS IN CANADA.

9 Q. IN CANADA?

10 A. AND WE MAY -- I AM NOT SURE. AT ONE POINT WE  
11 WERE STILL SUPPORTING DRE'S IN FRANCE, BUT I THINK THAT  
12 HAS SINCE GONE AWAY.

13 THE COURT: OKAY. I'M SORRY, MR. WIYGUL.

14 MR. WIYGUL: THAT'S OKAY, YOUR HONOR.

15 BY MR. WIYGUL:

16 Q. DO YOU HOLD ANY COLLEGE OR UNIVERSITY DEGREES?

17 A. YES. I HAVE A BACHELOR'S AND MASTER'S IN  
18 ELECTRICAL ENGINEERING.

19 Q. AND CAN YOU JUST VERY BRIEFLY DESCRIBE YOUR WORK  
20 EXPERIENCE PRIOR TO JOINING ES&S?

21 A. YEAH. RIGHT OUT OF COLLEGE I WORKED IN  
22 TECHNICAL ENVIRONMENTS, MANUFACTURING AND ENGINEERING  
23 ENVIRONMENTS, BOTH IN THE DEFENSE SYSTEMS AND IN THE  
24 COMMERCIAL WORLD. AND IN THOSE AREAS DEALT WITH MIL  
25 STANDARDS AND ISO 9000 ENVIRONMENTS, BUT ENGINEERING AND

1 SOME TECHNICAL PROJECT LEAD.

2 FROM THERE I WORKED FOR A RETAILER WHICH  
3 EVENTUALLY WAS ACQUIRED BY A FORTUNE 500 RETAILER. I  
4 MANAGED -- PRIMARILY DURING THAT TIME I MANAGED THEIR  
5 STORE RETAIL SYSTEMS. SO I HAD RESPONSIBILITIES FOR  
6 CASH REGISTER SYSTEMS, SERVERS, NETWORKS, WIRELESS  
7 NETWORKS, AND THEN DATA TRANSFERS BACK AND FORTH. I  
8 THEN DID SOME WORK ON THEIR CORPORATE SYSTEMS, SO  
9 LOGISTIC SYSTEMS, RETAIL -- MERCHANDISING SYSTEMS, HR,  
10 FINANCE. AT ONE POINT I DID A LOT OF GETTING SYSTEMS TO  
11 MAKE SURE -- I DID PHARMACY SYSTEMS SO HIPAA  
12 REQUIREMENTS. I DID FINANCIAL SYSTEMS, THE SARBANES  
13 OXLEY REQUIREMENT. WE DID CREDIT CARD INFORMATION, SO  
14 PAYMENT CARD INDUSTRY, PCI TYPE STANDARDS. SO DID A  
15 NUMBER OF THOSE, MANAGED EQUIPMENT DEPOTS AND CALL  
16 CENTERS AND A NUMBER OF DIFFERENT THINGS.

17 AND THEN FROM THERE TOOK THE JOB AT  
18 ELECTION SYSTEMS AND SOFTWARE.

19 BY THE COURT:

20 Q. HOW OLD ARE YOU?

21 A. PARDON ME?

22 Q. HOW OLD ARE YOU?

23 A. I AM 52.

24 Q. AND HOW LONG HAVE YOU BEEN WORKING, I WILL JUST  
25 SAY, IN COMPUTERS, ALL THE THINGS YOU HAVE JUST



1 DESCRIBED, HOW MANY YEARS BACK DOES THAT GO?

2 A. MY COMPUTER BASED EXPERIENCE WOULD HAVE STARTED  
3 IN APPROXIMATELY '98.

4 THE COURT: OKAY.

5 BY MR. WIYGUL:

6 Q. YOU ALREADY MENTIONED YOUR INVOLVEMENT WITH THE  
7 EXPRESSVOTE XL MACHINE IN PARTICULAR. AND I BELIEVE  
8 YOUR TESTIMONY WAS ALONG THE LINES OF YOU LED THE  
9 DEVELOPMENT AND THE IMPLEMENTATION OF THAT MACHINE, IS  
10 THAT FAIR?

11 A. YES.

12 Q. WHAT EXACTLY DID THAT ROLE ENTAIL?

13 A. MY PRIMARY RESPONSIBILITY WAS -- WE HAD THE  
14 EXPRESSVOTE AS A PRODUCT. AND THAT'S THE -- I THINK  
15 MOST PEOPLE IN THE COURT ARE FAMILIAR WITH IT. AND IT  
16 WAS A GOOD PRODUCT. IT WAS DOING WELL IN THE MARKET,  
17 BUT WHEN WE BROUGHT IT TO THE NORTHEAST, THE NORTHEAST  
18 CUSTOMERS WHO WERE FORMER LEVER MACHINE AREAS SAID, WE  
19 LOVE THE MACHINE, BUT WE HAVE FULL FACE -- SOME HAD FULL  
20 FACE REQUIREMENTS, SOME HAD FULL FACE DESIRES, AND SO  
21 THEY SAID WE LOVE IT. MAKE IT BIGGER.

22 THE COURT: FULL FACE. I AM NOT SURE  
23 WHAT THAT MEANS.

24 THE WITNESS: FULL FACE IS THE ATTEMPT TO  
25 REPRESENT THE ENTIRE BALLOT ON THE SCREEN AT A SINGLE

1 TIME, SO SIMILAR TO A LEVER MACHINE.

2 THE OTHER THING IS THEY LIKED -- BECAUSE  
3 OF THAT FULL FACE, IT GIVES THEM A VERY EFFICIENT, VERY  
4 FAST VOTING EXPERIENCE, ESPECIALLY IF YOU'RE VOTING DOWN  
5 PARTY LINES, SO PARTY ROWS OR PARTY COLUMNS, DEPENDING  
6 ON WHICH LEVER MACHINE YOU HAD BACK IN THE DAY FOR THAT.  
7 BY MR. WIYGUL:

8 Q. SO IN YOUR ROLE DEVELOPING AND IMPLEMENTING THE  
9 EXPRESSVOTE MACHINE, DO YOU HAVE ANY INVOLVEMENT IN THE  
10 DESIGN OF THE FEATURES OF THE MACHINE?

11 A. YEAH. I HAD AN INTIMATE INVOLVEMENT IN EVERY  
12 PORTION OF BOTH THE, YOU KNOW, THE OPERATING SYSTEM WE  
13 CHOSE, THE DEVELOPMENT ENVIRONMENT WE CHOSE, THE  
14 SECURITY FEATURES, THE HARDWARE DESIGN -- YOU KNOW,  
15 HARDWARE DESIGN, HARDWARE CONTROLS, EVEN THE COLOR,  
16 EVERY SINGLE PART OF IT, WHICH IS ACTUALLY THE HARDEST  
17 PART.

18 Q. WE HAVE HEARD SOME DESCRIPTION OF THE  
19 EXPRESSVOTE XL MACHINE FROM OTHER WITNESSES. BUT I  
20 WOULD LIKE YOU TO TELL THE COURT, IF YOU COULD PLEASE,  
21 HOW WOULD YOU DESCRIBE THE EXPRESSVOTE XL?

22 A. THERE'S TWO PRETTY TYPICAL TERMS THAT I AM  
23 COMFORTABLE WITH. ONE IS A HYBRID MACHINE, SO IT  
24 COMBINES WHAT HAS TYPICALLY BEEN A BALLOT-MARKING DEVICE  
25 AND A PAPER SCANNER/TABULATOR. SO THE BALLOT-MARKING

1 DEVICE, MAKE YOUR SELECTIONS ON A TOUCHSCREEN, AND PRINT  
2 OUT YOUR SELECTIONS, AND THEN THE BALLOT TABULATOR --  
3 SCANNER/TABULATOR BEING SCAN THE PIECE OF PAPER, TAKE  
4 THE DATA OFF OF THE PAPER, APPLY THE ELECTION RULES AND  
5 THEN CREATE A DATA FILE THAT HAS BEEN ADDED UP TO GET  
6 THE RESULTS.

7 Q. DID YOU SAY THERE WAS ANOTHER TERM?

8 A. THE SECOND TERM IS A UNIVERSAL VOTING MACHINE,  
9 AND THAT IS BASICALLY ANYBODY -- ANY VOTER CAN USE IT.  
10 SO A STANDARD VOTER WHO HAS ALL OF THEIR FACILITIES, ALL  
11 THE WAY TO A QUADRIPLAGIC COULD VOTE ON THAT MACHINE  
12 WITH THE PROPER EQUIPMENT, WHICH IS CERTIFIED, AND THEN,  
13 YOU KNOW, LOW COGNITIVE, LOW LITERACY VOTERS WITH ALL OF  
14 THE ADA ASSISTIVE ABILITIES.

15 Q. HAVE YOU HEARD THE TERM "DRE WITH VVPAT" OR  
16 "VVPAT"?

17 A. YES, I AM VERY FAMILIAR WITH THE TERM.

18 Q. IS THE EXPRESSVOTE XL A DRE WITH VVPAT?

19 A. IT IS NOT.

20 Q. CAN YOU EXPLAIN WHY?

21 A. WELL, A DRE IN ITS NATURE, AND THIS IS FROM THE  
22 TIME I -- BACK IN 2007 WHEN WE WERE LOOKING AT  
23 DEVELOPING A DRE, TO FAST FORWARD JUST A FEW YEARS AGO  
24 WHEN WE ACTUALLY BUILT ONE, THE DRE WAS A DEVICE THAT  
25 YOU MADE YOUR SELECTIONS, AND THE SELECTIONS AS THEY

1 WERE ENTERED WERE DIRECTLY RECORDED, THUS THE NAME  
2 DIRECT RECORD ELECTRONIC, DIRECTLY RECORDED INTO THE  
3 PERMANENT MEMORY. SO WHAT YOU STORE IS WHAT YOU  
4 ENTERED.

5 AND THE VVPAT IS AN AUDIT TRAIL THAT IS  
6 SOMEWHAT DISCONNECTED. IT'S BASICALLY -- IT'S LIKE A  
7 CASH REGISTER RECEIPT IN THAT IT'S PRINT IN GENERAL.  
8 THE ONE THAT ELECTION SYSTEMS AND SOFTWARE HAD, IT WOULD  
9 PRINT THE SELECTIONS AS YOU MADE THEM, AND IT WOULD, YOU  
10 KNOW, INVALIDATE THEM, BUT IT WOULD RECORD THE  
11 ELECTRONIC DATA SEPARATELY, INDEPENDENTLY OF THE PIECE  
12 OF PAPER. AND A DRE, THE PIECE OF PAPER, IS ONLY USED  
13 AS AN AUDIT TRAIL. IT IS NOT ACTUALLY USED FOR  
14 TABULATION OR STORING OF THE DATA IN ANY FASHION.

15 Q. CAN YOU JUST CARRY THAT THROUGH AND DESCRIBE  
16 WHAT ARE THE FEATURES OF THE EXPRESSVOTE XL, THAT VVPAT  
17 MAKE IT NOT A DRE?

18 A. THE EXPRESSVOTE XL, IT DOES ALLOW YOU TO MAKE  
19 YOUR SELECTIONS ON THE SCREEN OR USING ONE OF THE  
20 ASSISTIVE TECHNOLOGIES. BUT THE KEY DIFFERENCE IS THE  
21 TABULATED DATA COMES FROM SCANNING INFORMATION OFF OF  
22 THE PIECE OF PAPER. SO THAT GOES BACK TO THAT DUAL ROLE  
23 OF THE HYBRID MACHINE, WHERE IT IS -- AT ITS HEART, PART  
24 OF IT IS A SCANNER/TABULATOR. SCAN THE PIECE OF PAPER,  
25 TABULATE AND STORE THE DATA THAT COMES FROM THE PIECE OF

1 PAPER.

2 Q. AND TYPICALLY THE PAPER RECORD PRODUCED BY THE  
3 EXPRESSVOTE XL WOULD BE SCANNED AND TABULATED IN THE  
4 EXPRESSVOTE XL MACHINE, IS THAT RIGHT?

5 A. YES, THAT'S CORRECT.

6 Q. IS IT -- IS THAT THE ONLY WAY YOU COULD SCAN AND  
7 TABULATE THE PAPER RECORDS FOR USE OTHER THAN THE  
8 EXPRESSVOTE XL?

9 A. IT IS NOT.

10 Q. CAN YOU EXPLAIN WHAT THE ALTERNATIVES ARE.

11 A. YEAH. ALL OF OUR PAPER SCANNER/TABULATORS HAVE  
12 THE SAME TABULATION ENGINE AND THEY SCAN THE BALLOT. SO  
13 THEY SCAN AN IMAGE AND THAT IMAGE IS THEN PUT INTO A  
14 PROCESSING SOFTWARE MODULE. WE CALL IT OUR IMAGE  
15 PROCESSING MODULE. AND THAT MODULE IS IN THE XL, IT IS  
16 IN THE OUR DS200 PRECINCT SCANNER, IT'S IN OUR DS450 AND  
17 DS850 CENTRAL SCANNERS, AND THEY ALL DO EXACTLY THE SAME  
18 THING WITH ESSENTIALLY THE SAME CODE, AND THAT IS THEY  
19 PULL THE DATA OFF OF THE PIECE OF PAPER, THEY GENERATE A  
20 DATA FILE, AND THEN THEY EITHER -- THEY STORE AND THEN  
21 SUBSEQUENTLY -- STORE AND TABULATE AND SUBSEQUENTLY  
22 AGGREGATE THAT RECORD. SO THAT WHOLE PORTION OF IT IS  
23 IDENTICAL ACROSS ALL OF OUR PAPER BALLOT SCANNERS.  
24 Q. WE HAVE HEARD TESTIMONY ABOUT AN EXPRESSVOTE 2.1  
25 MACHINE, AND I THINK YOU MENTIONED THAT EARLIER.

1 A. YES.

2 Q. IS THAT ANOTHER EXAMPLE -- I DON'T KNOW IF YOU  
3 CALL IT A UNIVERSAL VOTING SYSTEM OR SOMETHING?

4 A. IT IS BOTH A HYBRID. IT IS CAPABLE OF BEING  
5 BOTH A HYBRID, AND IT IS A UNIVERSAL VOTING MACHINE.

6 Q. AND WE'VE HEARD TESTIMONY THAT THE PAPER RECORDS  
7 CREATED BY THE EXPRESSVOTE 2.1 MACHINE LOOK IDENTICAL TO  
8 THOSE CREATED BY THE EXPRESSVOTE XL.

9 A. YES. THEY ARE IDENTICAL.

10 Q. AND IF IT'S NOT PROPRIETARY, WHAT DOES THE XL  
11 STAND FOR?

12 A. THE XL IS BASED -- LIKE SOMEBODY MENTIONED,  
13 EXTRA LARGE. IT IS A FUNCTIONALLY SIMILAR VERSION OF  
14 THE EXPRESSVOTE, JUST BIGGER.

15 Q. NOW, WE HAVE AN EXPRESSVOTE XL MACHINE IN THE  
16 COURTROOM, IS THAT RIGHT?

17 A. THAT IS CORRECT. OVER ON THE OTHER SIDE OF THE  
18 JUDGE'S DESK IS AN EXPRESSVOTE XL.

19 MR. WIYGUL: AND WITH THE COURT'S  
20 PERMISSION, I WOULD ASK MR. BAUMERT TO COME DOWN OFF THE  
21 STAND AND MAYBE NARRATE HOW THE MACHINE CAN BE SET UP,  
22 AND THEN WALK THROUGH A DEMONSTRATION FOR THE COURT OF  
23 THE VOTING PROCESS.

24 THE COURT: THAT'S FINE. WOULD YOU LIKE  
25 TO MOVE OVER TO THE OTHER SIDE? LET'S GET THE

1 STENOGRAPHER SET UP. AND OBVIOUSLY IF YOU CAN'T HEAR,  
2 YOU WILL LET US KNOW.

3 THE WITNESS: SO THE EXPRESSVOTE XL, IT  
4 BASICALLY HAS THREE PARTS. IT HAS WHAT IS BASICALLY A  
5 CUSTOM 32-INCH TABLET PC. IT'S LIKE A BIG IPAD. IT HAS  
6 A SCANNER, PRINTER, WHAT WE CALL A PPM OR PAPER PATH  
7 MODULE, AND THEN IT HAS A CART. AND THE CART HAS  
8 STORAGE AREA, AND IT HAS BATTERY BACKUPS INSIDE THE  
9 BOTTOM OF HERE. SO BATTERIES, BASICALLY WATER TYPE OF  
10 BATTERIES, IT'S SEALED LEAD ACID BATTERIES. THE CART  
11 ALLOWS IT TO BE WHEELED IN AND LOCKED INTO PLACE AND SO  
12 IT'S -- THIS WOULD BE -- AND IT WAS SET UP BY THE CITY  
13 PHILADELPHIA STAFF TO BE KIND OF COVERED AND SEALED AS  
14 IT WOULD ARRIVE AT A POLL SITE. AND THAT IS, THERE IS A  
15 COVER THAT IS MEANT REALLY TO STAY IN PLACE AND PREVENT  
16 BEING ABLE TO DO ANYTHING SIGNIFICANT WITH CERTAIN PARTS  
17 OF THE MACHINE -- CERTAIN PARTS OF THE TABLET.

18 AND SO WHAT A POLL WORKER WOULD DO, AND I  
19 HAVE ALREADY DONE THIS. I ACTUALLY CHECKED THE SEALS  
20 WHEN THEY PUT THEM ON WITH THE NUMBER AND THEN CAME IN  
21 THIS MORNING, CHECKED THEM AGAIN TO MAKE SURE NOBODY IS  
22 MONKEYING WITH MY BABY HERE. SO THEY WOULD -- THEY ARE  
23 GOING TO TAKE THAT AND JUST BREAK IT OR CUT IT. AND  
24 THEY WOULD THEN TAKE THIS, RECORD THE SEAL NUMBER, AND  
25 THEN HAVE THAT AND KEEP THAT AS AN ARTIFACT FOR THE

1 ELECTION. AND THAT'S REALLY INTO THE PROCEDURES, THAT'S  
2 A PRETTY COMMON WAY FOR EVERYBODY TO DO IT.

3 AND SO WITH THAT SEAL BROKEN, IT IS NOW  
4 POSSIBLE, AND I DON'T KNOW IF YOU SAW THE STRAP, THAT'S  
5 WHAT THE SEAL WAS THROUGH.

6 THE COURT: SORT OF LIKE A SADDLE.

7 THE WITNESS: YEAH, EXACTLY.

8 AND SO FROM THERE, THIS PORTION CAN BE  
9 LIFTED OFF. THERE IS ALSO A SIMILAR COVER FOR THE PAPER  
10 PATH MODULE WITH A LITTLE HOOD THAT GOES OVER THE CARD  
11 BIN TO PREVENT WATER FROM GETTING IN IT.

12 AND SO THIS -- LET ME MAKE SURE. JUST  
13 FOR THE PURPOSES OF THE DEMONSTRATION, THERE IS A KEY IN  
14 HERE I JUST WANT TO MAKE SURE I DON'T LOSE. SO THIS IS  
15 THE UNIT. AND ALSO IN HERE -- SO IF YOU WANT TO TAKE A  
16 LOOK AT THE BACK, THERE IS A STORAGE AREA. I AM GOING  
17 TO BREAK THE SEAL IN THERE AS WELL. AND THE NUMBERS ARE  
18 VERY SIMILAR SO IT'S EASY TO REMEMBER. SO THIS WOULD  
19 HAVE -- THIS COULD BE USED TO STORE --

20 THE COURT: YOU ARE PUTTING A KEY IN.  
21 MAY I SEE THE KEY?

22 THE WITNESS: YES. IT'S A BARREL KEY, SO  
23 A LITTLE MORE SECURE.

24 THE COURT: IT'S A LOCK THAT IS MORE  
25 DIFFICULT TO PICK?



1 THE WITNESS: YES.

2 SO -- AND IN HERE I HAVE SOME OF MY  
3 GOODIES. SO A POLL PLACE COULD HAVE THEIR CARD STOCK.  
4 THERE IS ALSO -- THE ADA, WHAT THEY CALL AN AUDIO  
5 TACTILE INTERFACE. SO THIS IS WHAT AN ADA VOTER,  
6 WHETHER THEY BE BLIND, MOTOR IMPAIRED, A NUMBER OF  
7 DIFFERENT THINGS, BUT IT HAS THE ABILITY TO USE BUTTONS  
8 TO LISTEN TO AND NAVIGATE THE BALLOT. IT HAS THE  
9 ABILITY TO -- HERE IS THE HEADPHONES THAT THIS GETS  
10 PLUGGED INTO. IF WE CHOOSE TO DO THAT, I WILL HOOK  
11 SPEAKERS UP SO YOU CAN HEAR THE AUDIO. IT ALSO HAS A  
12 TWO-SWITCH INTERFACE, SO THEY CAN USE A ROCKER PADDLE,  
13 WHICH IS BASICALLY A TWO BUTTON THING WHERE YOU CAN  
14 NAVIGATE FORWARD IN THE BALLOT, SELECT FORWARD, FORWARD,  
15 FORWARD. SO GO TO THE FIRST CONTEST -- AND THEY CAN  
16 NAVIGATE AROUND JUST USING TWO BUTTONS. OR THEY COULD  
17 USE A SIP AND PUFF, WHICH IS YOU NAVIGATE THE SAME WAY,  
18 BUT YOU BLOW IN, I BELIEVE, TO NAVIGATE FORWARD; YOU SIP  
19 TO MAKE YOUR SELECTION. SO THUS A QUADRIPLLEGIC TRULY  
20 COULD VOTE ON THIS MACHINE, AND HAS.

21 AND THAT IS -- THERE ARE SPARE MEDIA IN  
22 HERE, AND I DON'T KNOW WHAT THAT IS. I THINK THAT MIGHT  
23 BE A SUPPLY BAG. SO IN THE PART HERE ARE EITHER TWO OR  
24 FOUR SEALED LEAD ACID BATTERIES. TWO BATTERIES GIVE  
25 SEVEN HOURS OF LIFE, AND THAT IS FOR THE FULL FUNCTION

1 OF THE MACHINE, AND FOUR BATTERIES WOULD GIVE 14 TO  
2 16 HOURS OF FULL USE. AND THAT IS RUNNING HARD,  
3 PRINTING OFTEN -- PRINTING OFTEN. SO --

4 THE COURT: THERE IS NO CHALLENGE ABOUT  
5 THE HANDICAP ACCESSIBILITY OF THESE MACHINES, IS THERE?

6 MR. MAAZEL: NO.

7 THE COURT: I DON'T ANTICIPATE WE ARE  
8 GOING TO NEED ANY OF THAT.

9 THE WITNESS: OKAY. SO THERE IS ALSO AN  
10 ACTIVITY LIGHT THAT CAN BE SEEN FROM A POLL WORKER'S  
11 POINT OF VIEW, SO THEY CAN POINT IT IN ANY DIRECTION AND  
12 AS THE VOTING IS GOING ON -- THE VOTE SESSION STARTS,  
13 THE LIGHT GOES ON. THE VOTE SESSION ENDS, THE LIGHT  
14 GOES OFF. AND WHEN THERE'S AN ERROR, THE LIGHT BLINKS.  
15 SO JUST ANOTHER WAY -- IF THEY POINT IT TOWARD THEM IN  
16 THIS WAY ACROSS THE WAY AND THEY MAY NOT BE ABLE TO HEAR  
17 THE ALERT INDICATORS FROM ACROSS THE POLL ROOM.

18 THE COURT: ARE THE ALERTS AUDIBLE?

19 THE WITNESS: YES. SO IT BINGS AND BEEPS  
20 AND A NUMBER OF DIFFERENT THINGS. IT'S QUITE ANNOYING  
21 WHEN THEY ARE TESTING THOSE.

22 SO THE OTHER THING -- THE OTHER PLACE  
23 THAT IT IS SEALED IS THERE IS A FRONT -- ON THE FRONT OF  
24 THE MACHINE OR ON THE TOP OF THE MACHINE, OF THE TABLET,  
25 IS A COMPARTMENT, AND THAT IS ALSO LOCKED AND SEALED.

1 IT IS LOCKED IN THE FRONT BUT IS SEALED IN THE BACK.  
2 AND THE PURPOSE OF THE SEAL BEING IN THE BACK SO THAT AS  
3 THE MACHINE IS OPEN FOR VOTING, IT'S DIFFICULT TO GET  
4 BACK BEHIND THERE AND MONKEY WITH THE CONTENTS OF THIS  
5 COMPARTMENT DURING THE VOTING PROCESS.

6 ALSO, THE SCREEN JUST ADJUSTS. SO IF YOU  
7 HAVE A STANDING VOTER, YOU WOULD ADJUST IT LIKE THIS.  
8 IF IT'S A SEATED VOTER, IT WOULD BE DOWN LIKE THAT. SO  
9 WE WILL MOVE IT UP JUST TO MAKE IT A LITTLE EASIER TO  
10 VIEW.

11 SO THIS IS -- THE ONLY OTHER THING WE  
12 WOULD DO IS WE WOULD PLUG IT IN. IT DOESN'T HAVE TO BE  
13 PLUGGED IN BECAUSE OF THE BATTERY. ALL OF THAT IS  
14 WORKING AS IT SHOULD.

15 MR. MAAZEL: YOUR HONOR, I KNOW THIS IS  
16 NOT OUR EXAMINATION. WHILE WE ARE ALL STANDING HERE, IF  
17 I -- MAY I ASK THE WITNESS TO EITHER REPEAT OR GIVE A  
18 LITTLE BIT MORE DESCRIPTION OF WHAT IS IN THE WHITE  
19 COMPARTMENT AT THE TOP.

20 THE COURT: SURE.

21 THE WITNESS: WE WILL, YES.

22 THE COURT: AFTER HE PLUGS IT IN.

23 THE WITNESS: YES. SO THE UNIT IS  
24 PLUGGED IN. THE POLL WORKER CHECKS TO MAKE SURE THE  
25 LIGHT -- THE GREEN LIGHT IS ON INDICATING THAT IT HAS

1 POWER, AND WE ALSO SEE IT'S STARTING TO COME TO LIFE,  
2 SAYING, I HAVE POWER, I HAVE A FULL BATTERY, BUT I AM  
3 NOT TURNED UP YET.

4 SO THE POLL WORKER WOULD RECORD AND BREAK  
5 THE SEAL FROM THE BACK. SO THIS ONE WAS PUT THROUGH  
6 THERE AND LOCKED. AND SO THAT SEAL. AND NOW THEY ARE  
7 ABLE TO UNLOCK THIS. SO UNDERNEATH HERE, FIRST OF ALL,  
8 IS A POWER BUTTON. SO I AM GOING TO GO AHEAD AND HIT IT  
9 SO THAT IT IS TURNING ON WHILE I DESCRIBE SOME OF THE  
10 OTHER THINGS. SO THAT'S TURNING ON THE UNIT. UNLIKE  
11 SOME OF THE SYSTEMS ON THE MARKET, WE PUT THE POWER  
12 BUTTON BEHIND A LOCKED AND SEALED DOOR. NOT ALL VOTING  
13 SYSTEMS DO.

14 WE ALSO HAVE HERE WHAT WE TERM IN ES&S AS  
15 A MODE BUTTON. SO THE TWO MODES BEING VOTING AND  
16 SUPERVISORY FUNCTIONS. AND UNDER THE SUPERVISORY MENU,  
17 THERE ARE -- IT'S A LOWER LAYER OF ADMIN FUNCTIONS THAT  
18 ARE PROTECTED UNDER DIFFERENT CREDENTIALS.

19 THERE ARE ALSO A COUPLE OF -- A FEW USB  
20 PORTS, THREE TO BE EXACT. AND IN ONE OF THEM IS THE  
21 MEDIA THAT WAS USED TO LOAD THE ELECTION ONTO THE  
22 SYSTEM.

23 SO IF I MAY, I WILL GO INTO JUST A LITTLE  
24 BIT OF DETAIL OF HOW WE PREPARE THIS MACHINE TO RUN THE  
25 ELECTION. SO THE SUITE OF PRODUCTS, EVS 6021 AS WE HAVE

1 DISCUSSED THEM, AND ALL OF OUR SUITES HAVE AN ELECTION  
2 MANAGEMENT SYSTEM. THE TERM IN THE INDUSTRY IS  
3 GENERALLY EMS. AND OUR EMS SYSTEM IS CALLED  
4 ELECTIONWARE. AND WHAT IT DOES IS IT TAKES ALL THE  
5 CANDIDATE AND CONTEST INFORMATION AND THE JURISDICTIONAL  
6 -- SO IF WE ARE STILL DOING PENNSYLVANIA STRAIGHT PARTY,  
7 THEY WOULD SELECT -- USE PENNSYLVANIA STRAIGHT PARTY.  
8 IT FORMATS THE BALLOTS. THERE ARE MODULES TO LAY OUT  
9 THE BALLOT AND -- AS TO HOW IT WILL APPEAR ON THE  
10 SCREEN, TO LAY OUT THE BALLOT AS IT WILL APPEAR ON A  
11 PAPER BALLOT, GET ALL OF THAT CONFIGURATION AND, YOU  
12 KNOW, DIFFERENT OPTIONS, WHETHER THERE IS A PASS CODE TO  
13 OPEN THE POLLS OR NOT. PHILLY CHOOSES TO HAVE THAT PASS  
14 CODE IN PLACE. AND ALL OF THOSE THINGS ARE BUNDLED AND  
15 ENCRYPTED AND WRITTEN TO A USB MEDIA, AND THAT USB MEDIA  
16 IS SIMPLY TO TRANSFER THE ELECTION DEFINITION OVER TO  
17 THE MACHINE.

18 IT ALSO CREATES WHAT WE CALL AN EQC  
19 MEDIA, WHICH IS AN ELECTION QUALIFICATION CODE. AND  
20 THAT'S A SEPARATE PIECE OF USB MEDIA THAT IS USED TO PUT  
21 THE ENCRYPTION KEYS AND THE SPECIFIC ELECTION THAT ARE  
22 GOING TO BE ON THE MACHINE. SO YOU TRANSFER THOSE  
23 ENCRYPTION KEYS ON TO THE MACHINE, AND THEN YOU TRANSFER  
24 THE ELECTION DEFINITION AND CONFIGURATION INFORMATION,  
25 AND THE MACHINE USES THOSE KEYS TO UNENCRYPT IT.

1                   SO ONCE THE ELECTION IS LOADED ONTO THE  
2           MACHINE AND THE MACHINE HAS EVERYTHING IT NEEDS, THIS  
3           USB STICK IS REALLY NOT USED. IT JUST SITS IN THE  
4           MACHINE UNTIL IT IS -- UNTIL IT IS TO BE USED TO  
5           TRANSFER VOTE DATA AND RESULTS BACK OFF OF THE MACHINE.

6                   SO IN SOME OF OUR OTHER PREVIOUS SYSTEMS,  
7           THIS USB MEDIA WAS ACTUALLY THE DATA DRIVE OF THE  
8           MACHINE. IN THIS CASE IT SIMPLY TRANSFERS ELECTION  
9           DEFINITION ON, AND TAKES RESULTS BACK OFF. OTHERWISE IT  
10          JUST SITS IN THE MACHINES.

11                   THESE USB PORTS ARE LOCKED DOWN SO THEY  
12          ARE -- THE WHOLE MACHINE IS PROGRAMMED TO ONLY RECOGNIZE  
13          OUR PARTICULAR TYPE OF USB STICK. AND SO IT MAKES SURE  
14          THAT IT IS ONLY THAT KIND OF STICK THAT IT IS PROGRAMMED  
15          FOR THE SPECIFIC FUNCTION THAT YOU ARE PERFORMING. SO  
16          IF YOU ARE TRYING TO LOAD AN ELECTION IN AND YOU TRY TO  
17          STICK AN EQC STICK IN, IT KNOWS THE DIFFERENCE AND WILL  
18          ONLY LET YOU DO WHAT THAT STICK ALLOWS.

19                   THEN IT VERIFIES THE DIGITAL SIGNATURE OF  
20          THE DATA, WHICH IS A MEANS OF DETERMINING THAT THE DATA  
21          HAS NOT BEEN CHANGED SINCE IT WAS SENT FROM THE TRUSTED  
22          SOURCE AND THAT IT IS FROM THE TRUSTED SOURCE, BEING OUR  
23          SPECIFIC ELECTION MANAGEMENT SYSTEM. SO IT CHECKS TO  
24          MAKE SURE THAT THAT DATA HAS GOOD INTEGRITY. AND THEN  
25          IT LOADS THAT DATA IN ENCRYPTED FORM ONTO THE INTERNAL

1 DATA DRIVES, THE INTERNAL HARD DRIVE, SOLID STATE  
2 DRIVES, AND IT STORES IT THERE ENCRYPTED.

3 FROM THERE, AS IT IS NEEDED, IT IS  
4 UNENCRYPTED INTO VOLATILE MEMORY, SO -- AND WE CAN TALK  
5 ABOUT EXACTLY WHAT THAT IS, D-RAM FOR TECHNICAL PEOPLE.  
6 AND THAT TYPE OF MEMORY IF THE MACHINE IS SHUT OFF, ALL  
7 THAT DATA JUST GOES AWAY SO IT IS REALLY NOT VULNERABLE.

8 SO LET ME SEE -- SO THE -- THERE ARE KIND  
9 OF LAYERS OF SECURITY DEALING WITH THOSE USB STICKS. IF  
10 YOU TRY TO PLUG A KEYBOARD IN, IT WILL IGNORE IT. IF  
11 YOU TRY TO PLUG A STICK FROM WALMART IN, IT WILL IGNORE  
12 IT. AND ANYTHING THAT IT DOESN'T KNOW WHAT IT IS AND AS  
13 A CERTIFIED PART OF THE SYSTEM, IT WILL IGNORE IT.  
14 SO --

15 THE COURT: AS FAR AS YOU KNOW, WHO SETS  
16 THIS UP AT THE POLLING PLACE, POLL WORKERS?

17 THE WITNESS: IT IS POLL WORKERS, YES.

18 THE COURT: THEY ARE TRAINED BY ES&S?

19 THE WITNESS: NO. GENERALLY -- WE CAN  
20 TRAIN POLL WORKERS, BUT GENERALLY WE TRAIN THE CUSTOMER,  
21 AND THE CUSTOMER TRAINS THE POLL WORKERS.

22 THE COURT: SO REPRESENTATIVES FROM THE  
23 CITY ARE TRAINED BY YOU?

24 THE WITNESS: YES.

25 THE COURT: OKAY.

1 THE WITNESS: IT WOULD BE WHAT WE CALL A  
2 TRAIN THE TRAINER TYPE OF SITUATION. AND WE TEND --  
3 NOW, WE WILL DO ANYTHING FOR MONEY. SO WE TEND TO -- IF  
4 A CUSTOMER REALLY WANTS US TO -- WANTS US TO TRAIN --

5 MR. MAAZEL: I FINISHED MY CROSS.

6 MR. WIYGUL: I WANT THE RECORD TO REFLECT  
7 THE LAUGHTER.

8 THE COURT: IT'S A BUNCH OF LAWYERS.

9 THE WITNESS: BUT GENERALLY, FROM A  
10 TRAINING STANDPOINT, POLL WORKER TRAINING IS VERY  
11 JURISDICTIONAL. THEIR TERMINOLOGY, THEIR PROCEDURES,  
12 ALL OF THAT. SO FOR US TO LEARN EXACTLY ALL OF THE  
13 NUANCES OF EVERY PARTICULAR CUSTOMER AND TURN THAT INTO  
14 TRAINING MATERIALS IS BEYOND THE SCOPE OF THE BUSINESS  
15 WE WANT TO BE IN. SO WE WILL TRAIN THE VERY TECHNICAL  
16 DETAILS OF THE OPERATION OF OUR SYSTEM, AND WE WILL HELP  
17 THEM TURN THAT INTO JURISDICTIONAL-SPECIFIC TRAINING.

18 THE COURT: OKAY.

19 THE WITNESS: AND SO WHAT WE HAVE GONE  
20 THROUGH NOW IS JUST -- WE HAVE POWERED THE MACHINE UP.  
21 WE HAVE A CHALLENGE ACCESS CODE THAT WE NEED TO ENTER.  
22 SO I WILL GO AHEAD AND ENTER THAT, AND IT IS A VERY  
23 GENERIC ONE. SO RIGHT NOW WHAT IT IS DOING, IT IS --  
24 FROM THE INTERNAL HARD DRIVE, IT IS POLLING THAT  
25 ELECTION DEFINITION, CHECKING THE SIGNATURE ON TO MAKE



1 SURE IT STILL HAS NOT BEEN TAMPERED WITH, AND THEN  
2 EXPLODING THAT INTO D-RAM. AND NOW IT IS AVAILABLE, ALL  
3 OF THAT ELECTION DEFINITION INFORMATION IS AVAILABLE TO  
4 THE MACHINE.

5 THIS IS A GENERAL STATUS SCREEN THAT  
6 COMES UP, AND REALLY A VOTER -- A POLL WORKER IS GOING  
7 TO BE TOLD, LOOK FOR GREEN CHECK MARKS. IF YOU SEE ANY  
8 YELLOW OR RED, CALL FOR SUPPORT. SO IT HAS SOME GENERAL  
9 INFORMATION. AND IN OUR CASE, WHERE -- THE POLLS ARE  
10 ALREADY OPEN. GENERALLY WHAT WOULD HAPPEN THOUGH IS  
11 THEY WOULD HIT OPEN POLLS. IT WOULD AUTOMATICALLY PRINT  
12 THE ZERO TAPE, AND IT WOULD -- IT WOULD ACTUALLY  
13 CHALLENGE THEM FOR A PASS CODE. IT WOULD AUTOMATICALLY  
14 PRINT THE ZERO TAPE, AND IT WOULD THEN GO TO THIS  
15 SCREEN.

16 THE COURT: ZERO TAPE?

17 THE WITNESS: A ZERO TAPE IS A RESULTS  
18 TAPE. IT SHOWS THE VOTING RESULTS ARE ZERO. SO ON OUR  
19 MACHINES IF THEY ARE -- A ZERO TAPE CAN ONLY BE PRINTED  
20 IF THE POLLS HAVE NOT BEEN OPEN, AND A RESULTS TAPE CAN  
21 ONLY BE PRINTED IF THE POLLS HAVE BEEN CLOSED. SO THERE  
22 ARE SOME PROTECTIONS, AND THERE IS ALSO -- WE ALSO HAVE  
23 SOME FEATURES WHERE WE -- NOT ONLY DO WE PRINT THAT  
24 RESULTS TAPE THAT SHOWS ALL ZEROS, BUT WE STORE AND  
25 DIGITALLY SIGN A COPY OF IT ONTO THE MACHINE. IF THEY

1        LOSE THAT PAPER COPY, THEY CAN GO IN AND REPRINT A COPY.  
2        IT'S NOT ACTUALLY REGENERATED AGAIN, BECAUSE THE MACHINE  
3        WOULD HAVE VOTES ON IT, BUT THE ZERO TAPE IS STORED  
4        DIGITALLY ON THERE AS ANOTHER ARTIFACT OF THE ELECTION.  
5        AND IT SHOWS WHEN THE POLLS OPENED AND THAT KIND OF  
6        THING.

7 SO I AM GOING TO GO AHEAD AND GO INTO  
8 VOTING AND NOW THE MACHINE IS READY TO VOTE. THEY WOULD  
9 CLOSE THIS -- ALSO, ONE THING I WOULD SAY IS THIS IS THE  
10 REPORT PRINTER HERE, ACCESS TO THAT. YOU HAVE TO HAVE  
11 THIS OPEN TO -- YOU HAVE TO HAVE THIS ACCESS DOOR TO THE  
12 PRINTER, IS ONLY ACCESSIBLE IF YOU HAVE THIS COMPARTMENT  
13 OPEN. SO A VOTER CAN'T WALK UP TO IT AND STEAL THE  
14 PAPER ROLL, NOT THAT THEY WOULD IN PHILADELPHIA. BUT --  
15 THE COURT: PERHAPS IN NEW YORK.

16 THE WITNESS: DEFINITELY IN NEW YORK. SO  
17 THEY ALSO HAVE -- WE HAVE JUST SOME MECHANICAL FEATURES.  
18 SO YOU CAN'T PRY UP THIS SIDE. THERE'S A PLASTIC HOOK  
19 THAT YOU WOULD HAVE TO BREAK. WHEN YOU PUT THE KEY IN  
20 AND PULL IT UP FROM THE MIDDLE, IT FLEXES THE DOOR AND  
21 RELEASES THAT HOOK. SO THE POLL WORKER WOULD NOW LOCK  
22 THAT, COME AROUND, RECORD THE NUMBER OF THE SEAL, PUT  
23 THE SEAL INTO PLACE, AND THEY ARE OFF AND RUNNING.

24 ANY QUESTIONS TO THIS POINT?

25 THE COURT: WELL, UNFORTUNATELY, THE ONLY

1 PERSON WHO CAN ASK YOU QUESTIONS RIGHT NOW IS MR.  
2 WIYGUL.

3 THE WITNESS: I'M SORRY. I AM IN DEMO  
4 MODE HERE.

5 MR. WIYGUL: I DON'T HAVE ANY QUESTIONS  
6 AT THIS POINT. THANK YOU.

7 THE WITNESS: OKAY. SO WE HAVE JUST KIND  
8 OF GONE THROUGH A VERY BASIC RUN-THROUGH OF THE SETUP OF  
9 THE MACHINE. WE CAN NOW VOTE. AND SO THE CARD THAT WE  
10 HAVE HERE, THERE IS SOME CONTENTION AS TO WHAT THIS IS.  
11 AT THE MOMENT IN ES&S TERMINOLOGY, THIS WOULD BE  
12 REFERRED TO AS AN ACTIVATION CARD BECAUSE IT IS WHAT IS  
13 USED TO ACTIVATE THE VOTE SESSION TO ALLOW THE VOTER TO  
14 START.

15 ONCE IT IS MARKED, WE WOULD REFER TO IT  
16 AS THE BALLOT, BECAUSE -- AND THAT -- AND WE WOULD BRAG  
17 ABOUT THE FACT THAT THE ACTIVATION CARD HAS NOW BEEN  
18 CONSUMED. YOU CANNOT ACTIVATE ANOTHER VOTE SESSION WITH  
19 IT. SO THAT'S KIND OF ONE OF THE BENEFITS OF THE WAY WE  
20 DO IT.

21 THE COURT: SO THE VOTER HAS TO INSERT  
22 THAT CARD?

23 THE WITNESS: IT IS UP TO THE  
24 JURISDICTION. THE VOTER COULD. A POLL WORKER COULD,  
25 BECAUSE UNTIL THEY ACTUALLY START MAKING SELECTIONS,

1       THERE IS REALLY NOTHING PRIVATE YET THAT HAS BEEN  
2       ENCOUNTERED GENERALLY.  AGAIN, THAT'S JURISDICTIONS.

3                   THE COURT:  IN PHILADELPHIA, AS FAR AS  
4       YOU KNOW, THE POLL WORKER WOULD INSERT THE CARD AND THEN  
5       TELL THE VOTER TO COME INTO THE BOOTH, OR WOULD THE  
6       VOTER DO IT.  IF YOU DON'T KNOW --

7                   THE WITNESS:  I WOULD -- I AM NOT SURE IF  
8       I CAN ANSWER THAT SPECIFICALLY.

9                   MR. ARONCHICK:  THAT WOULD BE ANOTHER  
10      WITNESS.

11                  THE WITNESS:  SO THEY WILL BE ABLE TO  
12      TELL YOU, BUT IT ALSO DEPENDS ON WHETHER OR NOT THERE  
13      ARE MULTIPLE BALLOTS ON THE MACHINE.  SO IN A PRIMARY  
14      ELECTION, YOU KNOW, IF THERE IS A DEMOCRATIC BALLOT AND  
15      A REPUBLICAN BALLOT, EITHER YOU PRINT THE INFORMATION ON  
16      THE CARD THAT AUTOMATICALLY TELLS THE MACHINE WHICH.  SO  
17      IT WOULD BE A BARCODE THAT WOULD TELL THE MACHINE PULL  
18      UP THIS BALLOT OR YOU WOULD PUT A BLANK CARD IN AND A  
19      POLL WORKER WOULD MAKE THE SELECTION BASED ON WHAT THEIR  
20      VOTER AUTHORIZATION SLIP OR WHATEVER THEY USE FOR  
21      INDICATING WHAT PARTY THEY ARE IN.  AND THEN DIFFERENT  
22      CUSTOMERS IN DIFFERENT STATES ARE REALLY TOUCHY ABOUT  
23      WHETHER THE POLL WORKER ACTUALLY TOUCHES THE SCREEN WHEY  
24      THEY ARE INTERACTING JUST FOR PERCEPTION SAKE.

25                  THE COURT:  HOW LONG IS THAT CARD?

1 THE WITNESS: THIS CARD IS 14 INCHES.

2 THE COURT: HOW WIDE ACROSS?

3 THE WITNESS: IT IS HALF OF A LETTER, SO  
4 IT'S FOUR AND A QUARTER. AND A COUPLE OF THINGS ABOUT  
5 THE CARD. IT IS ALWAYS THE SAME LENGTH AS THE OVAL  
6 FILLED BALLOT IF YOU ARE USING BOTH IN THE ELECTION. IT  
7 IS A LIMITATION OF OUR SYSTEM. AND IT'S ABOUT THE SAME  
8 WEIGHT. THE GOAL WAS TO MAKE THIS PAPER -- WHEN PEOPLE  
9 THINK OF THERMAL STOCK, THEY THINK OF FLIMSY RECEIPT  
10 TAPE. THIS IS ACTUALLY THE SAME WEIGHT AND THICKNESS AS  
11 OUR REGULAR PAPER BALLOT STOCK. IT IS THERMAL PAPER, SO  
12 IT HAS A COATING ON ONE SIDE. THAT'S -- ONE OF THE  
13 BENEFITS IS IT'S THERMALLY PRINTED, SO THERE IS A  
14 PRINthead THAT, FOR LACK OF A BETTER TERM, BURNS THE  
15 IMAGE OF THE VOTE SELECTIONS ON TO THE CARD, AND SO  
16 THERE IS ONLY A COATING ON ONE SIDE, SO WE HAVE A LITTLE  
17 TACTILE INDICATOR ON THE CORNER AND IT WILL ONLY ACCEPT  
18 IT IN THAT ORIENTATION. SO IF YOU TRY TO INSERT IT  
19 WRONG, IT'S GOING TO SQUAWK AT YOU, AND IT'S GOING TO  
20 RESET ITSELF.

21 THE COURT: AND IT SAYS CARD CANNOT BE  
22 READ.

23 THE WITNESS: RIGHT. AND THERE'S  
24 ADDITIONAL INFORMATION. A POLL WORKER COULD PULL UP AS  
25 TO WHY, BUT GENERALLY IT JUST MAKES SURE THE CORNER CUT

1 IS ON THE RIGHT SIDE, AND THAT IS VERY SPECIFICALLY SO  
2 THAT YOU CAN'T TRY TO PRINT IT ON THE SIDE THAT DOESN'T  
3 HAVE THE COATING BECAUSE IT WOULDN'T PRINT.

4 SO I THINK, AS HAS BEEN MENTIONED, THERE  
5 IS A LITTLE BIT OF A DIFFERENCE BETWEEN WHEN THE PAPER  
6 PATH PULLS IN THE CARD, THE FIRST THING IT'S DOING IS  
7 IT'S EVALUATING THAT CARD TO MAKE SURE IT DOESN'T  
8 ALREADY HAVE SELECTIONS ON IT. BECAUSE IT IS POSSIBLE  
9 TO TAKE ANY CARD FROM ANY PROGRAM MACHINE AND TAKE IT  
10 OVER TO A DIFFERENT MACHINE THAT IS PROGRAMMED WITH THE  
11 SAME INFORMATION AND INSERT IT, LOOK AT YOUR CHOICES,  
12 LOOK AT THE SUMMARY OF YOUR CHOICES AND CAST IT, IF YOU  
13 WOULD LIKE.

14 SO I THINK IT HAS BEEN SAID BEFORE, THE  
15 PRINthead IS LIFTED UP SO WE CAN MOVE THE PAPER AT HIGH  
16 SPEED - HIGHER SPEED. THERE ARE A FEW THINGS. ONE IS  
17 MAKE THE VOTE SESSION AS FAST AS POSSIBLE. IN THIS  
18 ELECTION, WHICH IS A DEMONSTRATION ELECTION THAT THE  
19 CITY OF PHILADELPHIA USES FOR SOME OF THEIR TRAINING AND  
20 OUTREACH, IT HAS TWO LANGUAGES. SO THIS IS THE POINT  
21 WHERE A POLL WORKER, IF THEY WERE INVOLVED IN THE  
22 PROCESS, WOULD STEP AWAY. A POLL WORKER COULD -- OR A  
23 VOTER COULD SELECT THEIR LANGUAGE.

24 MR. WIYGUL: CAN I INTERRUPT WITH ONE  
25 QUESTION?

1 THE WITNESS: YES.

2 MR. WIYGUL: YOU TALKED A LITTLE BIT  
3 ABOUT PRIVACY. ARE THE FEATURES OF THE MACHINE THAT YOU  
4 HAVE NOT DESCRIBED YET ALLOW FOR VOTER PRIVACY?

5 THE WITNESS: YEAH. THE ONE THING IS  
6 SIMILAR TO THE OLD LEVER MACHINES, IT HAS A CURTAIN THAT  
7 CAN BE PUT UP. IT'S REALLY HARD TO DEMONSTRATE THE  
8 MACHINE WHEN THE CURTAIN IS UP FOR OBVIOUS REASONS, BUT  
9 THE VOTER WOULD BE INSIDE THE CURTAIN.

10 THE COURT: AND THE TWO LANGUAGES IN THIS  
11 PARTICULAR CONFIGURATION ARE ENGLISH AND SPANISH?

12 THE WITNESS: CORRECT. IT CAN DO UP TO,  
13 I THINK, 12 LANGUAGES.

14 AND EVEN IF THEY, YOU KNOW, I ALWAYS SAY  
15 THERE IS A MEANS OF -- IF YOU GET INTO THE BALLOT, WE  
16 HAVE VOTERS THAT SAY I AM GOING TO VOTE IN SPANISH THIS  
17 TIME AND THEN THEY GET TO THE REALLY LONG QUESTIONS AND  
18 THEY SAY I DON'T KNOW SPANISH, SO THEY CAN SWITCH DURING  
19 THE VOTING SESSION AND THEY CAN SWITCH BACK TO ENGLISH  
20 OR VICE VERSA.

21 SO THE VOTER WOULD THEN BEGIN THE  
22 PROCESS. THIS IS AGAIN A FAIRLY STRAIGHTFORWARD BALLOT.  
23 AND SO IN ITS NORMAL FORM, IT IS A GRID TYPE BALLOT FOR  
24 THE PARTISANS, SO DEPENDING ON AGAIN ON THE  
25 JURISDICTION. PENNSYLVANIA TENDS TO USE PARTY COLUMNS.

1       IN OTHER PLACES THEY WILL USE THE DEMOCRAT, AND THE  
2       PARTIES WILL BE ON THE SIDE AND THE CONTEST WILL BE ON  
3       THE TOP, AND WHICH THEY CHOOSE, IRONICALLY ENOUGH, JUST  
4       HAS TO DO WITH WHICH LEVER MACHINE THEY USED TO HAVE  
5       BACK IN THE DAY THAT KIND OF SET THEIR PRECEDENTS.

6                       SO HERE IF I WANTED TO JUST BLOW DOWN THE  
7       DEMOCRATIC SIDE, I WOULD JUST GO TAP, TAP. AND ON THIS  
8       PARTICULAR ELECTION THERE IS ONLY VOTES FOR ONE CONTEST.  
9       SO IF I WANT TO CHANGE MY VOTE TO SOMEONE ELSE, I CAN  
10      SAY, I LIKE ALL OF THOSE DEMOCRATS EXCEPT FOR TINA FEY.  
11      SHE DRIVES ME NUTS. SO I'M GOING TO SWITCH OVER TO  
12      CLIFF LEE. AND IT WILL TOGGLE OVER TO THAT. IF IT WAS  
13      A VOTE FOR MORE THAN ONE, SAY, VOTE FOR THESE THREE  
14      COUNCILMEN AND YOU SELECTED THREE AND YOU WENT TO VOTE  
15      FOR A FOURTH, IT WOULD GIVE YOU AN ALERT THAT SAYS YOU  
16      HAVE TO DESELECT ONE OF YOUR CHOICES BEFORE YOU ARE  
17      ALLOWED. SO IT WILL NOT LET YOU OVERVOTE. THERE ARE  
18      UNDERVOTE PROTECTIONS ALSO THAT YOU CAN TURN ON FOR SOME  
19      OR ALL OF THE RACES. SO IT'S -- IN OTHER AREAS OF THE  
20      COUNTRY, IT'S NOT UNCOMMON TO HAVE THE UNDERVOTE WARNING  
21      TURNED ON FOR PRESIDENT AND GOVERNOR AND THE THREE OR  
22      FOUR MOST IMPORTANT RACES. AND DOGCATCHER AND ALL OF  
23      THOSE NOT, BUT YOU CAN TURN IT ON FOR ALL OF THEM.

24                      THE COURT: LIKE IN PHILADELPHIA IT'S --  
25      AT LEAST IN AN OFF-YEAR ELECTIONS, AS THEY ARE CALLED,



1 THOSE ARE WHEN THE JUDICIAL RACES USUALLY TAKE PLACE,  
2 AND YOU WILL VOTE FOR, SAY, FIVE COMMON PLEAS COURT  
3 JUDGES AND THERE ARE 30 CANDIDATES. THE MACHINE COULD  
4 BE PROGRAMMED TO ALLOW YOU TO VOTE FOR ONLY ONE AND THE  
5 MACHINE CAN BE PROGRAMMED TO REQUIRE YOU TO VOTE FOR  
6 FIVE?

7 THE WITNESS: I KNOW THAT IT CAN BE  
8 PROGRAMMED TO ALLOW YOU TO VOTE FEWER THAN ALLOWED  
9 SELECTIONS. I DON'T KNOW IF WE -- I DON'T THINK THERE  
10 IS ANY JURISDICTIONS THAT REQUIRE YOU TO VOTE.

11 THE COURT: SO IT ALLOWS FOR BULLET  
12 VOTING.

13 THE WITNESS: YES. AND THERE'S SAME  
14 PROTECTIONS FOR A BLANK BALLOT. SO IF YOU JUST BLEW  
15 THROUGH AND SOME VOTERS COME IN. THE ONLY REASON THEY  
16 ARE VOTING IS TO NOT AGE OFF THE VOTER ROLLS. THEY WILL  
17 COME IN AND CAST A BLANK BALLOT, WHICH IS AMAZING. BUT  
18 THEY DON'T CARE ABOUT THIS ELECTION, BUT THEY KNOW IF  
19 THEY DON'T VOTE THIS TIME THEY'RE GOING TO DROP OFF FOR  
20 THE ELECTION THEY DO CARE ABOUT. SO IT IS -- BUT IN  
21 SOME PLACES THEY DON'T ALLOW A BLANK BALLOT OR THEY WANT  
22 TO WARN OF A BLANK BALLOT. ALL OF THOSE ARE THINGS THAT  
23 BECAUSE OF THE USER INTERFACE CAN BE PROGRAMMED TO  
24 PROMPT A VOTER THAT SAID HEY, BECAUSE IT'S POSSIBLE THAT  
25 THEY WOULD HIT A -- HIT SOMETHING ON THE TOUCHSCREEN BY

1 ACCIDENT, AND WE DON'T WANT THAT TO BE A MISTAKE THAT  
2 THEY CAN'T CHANGE.

3 SO I WENT AHEAD AND VOTED THE PARTISAN --  
4 ACTUALLY WHAT I'LL DO, I AM GOING TO DESELECT THAT ONE,  
5 AND I AM GOING TO GO AHEAD AND I'M GOING TO WRITE IN MY  
6 BUDDY BOB, BECAUSE BOB IS A GOOD GUY. AND NOW IT HAS  
7 BOB AS A WRITE-IN.

8 MR. WIYGUL: CAN WE ALSO -- FOR  
9 DEMONSTRATION PURPOSES, CAN WE LEAVE A RACE BLANK, AN  
10 UNDERVOTE?

11 THE WITNESS: YES. SO I'M GOING TO -- I  
12 DON'T REALLY LIKE CLIFF LEE ANY MORE, SO I LEFT ONE  
13 BLANK. I DID A WRITE-IN. ON THE QUESTIONS I AM GOING  
14 TO VOTE YES AND NO. I AM NOT SURE WHAT THOSE ARE, LIKE  
15 SOME VOTERS. AND I'M GOING TO -- NOW THIS IS REQUIRED  
16 BY THE EAC, THE FEDERAL STANDARDS THAT SAY IF YOU ARE  
17 GOING TO PRINT LIKE THIS, YOU HAVE TO GIVE THEM A  
18 WARNING THAT THIS IS -- IT'S MORE DIFFICULT TO GET OUT  
19 FROM THIS. ALL OF THESE USER PROMPTS THAT THE VOTER  
20 SEES ARE CUSTOMIZABLE. SO IF THERE IS PARTICULAR  
21 JURISDICTIONAL LANGUAGE AND THEY'RE ALL ONLY IN MULTIPLE  
22 LANGUAGES DEPENDING ON -- SO IF I RETURN TO THE BALLOT  
23 AND I CHANGE MY LANGUAGE TO SPANISH, AND THEN I GO TO  
24 PRINT, IT'S GOING TO GIVE ME THE SAME IN THE OTHER  
25 LANGUAGE. SO I DON'T SPEAK SPANISH. SO I'M GOING TO

1 CHANGE IT BACK. AND SO I'M GOING TO PRINT. I DO WANT  
2 TO PRINT. I AM HAPPY WITH WHAT THE SELECTIONS I HAVE  
3 MADE. AND YOU NOTICE THE PAPER MOVES SLOWER, THE  
4 MACHINE IS A LITTLE NOISIER BECAUSE THAT'S THAT THERMAL  
5 PRINTER KICKING IN. AND IT IS FAIRLY NOTICEABLE, AND IT  
6 IS GOING TO ALLOW YOU THEN TO SEE WHAT YOU HAVE SEEN UP  
7 ON THE EXHIBIT SCREEN, AND THAT IS SOME INFORMATION  
8 ABOUT THE ELECTION AND WHAT BALLOT THEY WERE VOTING, THE  
9 BARCODES, WHICH I CAN EXPLAIN IN MORE DETAIL LATER, AND  
10 THE HUMAN READABLE TEXT. THE WRITE-IN, BOB, HAS A  
11 LITTLE ARROW, SO IF THEY ARE REALLY GOING AND COUNTING  
12 THE WRITE-INS FROM THE PAPER, IT MAKES THOSE A LITTLE  
13 EASIER TO FIND. AND THE -- LET ME SEE, AND IN THE STATE  
14 TREASURER'S RACE, IT SAYS NO SELECTION. SO REGARDLESS  
15 IF THERE IS A VOTE FOR 12, IF I DON'T VOTE FOR ANY OF  
16 THE JUDGES, AND I HAD TO VOTE -- I COULD HAVE VOTE FOR  
17 12, IT WILL HAVE 12 NO SELECTIONS. THESE CAN BE  
18 PROGRAMMED, SO IT IS READY TO GO. IF I DIDN'T LIKE IT,  
19 PHILLY HAS THIS SET UP TO SAY SPOIL.

20 I AM GOING TO CAST THIS ONE. AND YOU  
21 HEARD -- YOU SAW THE PAPER MOVE AND YOU HEARD WHAT IT  
22 SOUNDED LIKE. AND SO A LITTLE HIGHER PITCH SOUND  
23 BECAUSE IT IS MOVING FASTER AND NOT THAT HMMM OF THE  
24 THERMAL PRINTER GOING, AND IT HAS DEPOSITED IT INTO THE  
25 BIN. THE BIN IS PROTECTED AND SO THE PAPER PATH MODULE

1 HAS -- POINTING TO THE SIDE HERE, THERE IS AN AREA WHERE  
2 THE TEXTURE HAS BEEN TAKEN OFF OF THE PLASTIC SO THAT A  
3 SECURITY SEAL, SO RIGHT THERE YOU CAN SEE -- FEEL IT'S  
4 SMOOTH WHEREAS THIS IS A LITTLE ROUGHER. THAT SECURITY  
5 SEAL WOULD THEN GO ON THERE. WHEN YOU PULL IT OFF, IT'S  
6 OBVIOUS, IT LEAVES JUNK ON THE THING.

7 SO AT THE END OF THE NIGHT AND AT VARIOUS  
8 TIMES THIS CAN BE OPENED. AND AT THE END OF THE NIGHT  
9 AFTER THEY HAVE CLOSED THE POLLS, YOU CAN REMOVE THIS  
10 BIN. THE KEY IS IN THE WAY HERE. SOMEBODY WAS SMART  
11 ENOUGH TO PUT A KEY IN HERE IN CASE I LOST THE FIRST  
12 ONE, WHICH I ALMOST DID. THIS IS THE BIN THIS GOES  
13 INTO. THE MAIN ACCESS TO THE BIN, THE PLACE WHERE THEY  
14 WOULD LIFT THE BIG DOOR OPEN TO TAKE THE BALLOTS OUT FOR  
15 STORING PURPOSES OR FOR DISCARDING, IS ALSO SEALED, AND  
16 THERE IS A PLACE TO SEAL. THERE IS A LITTLE TRAP DOOR  
17 THAT OPENS UP WHEN YOU SNAP THE BIN INTO PLACE. THE  
18 CARDS DROP INTO THERE, AND THERE IS A WAY TO SEAL THAT.  
19 YOU CAN ALSO PUT A TAPE SEAL ACROSS.

20 SO THIS VERY EASILY SNAPS INTO PLACE, AND  
21 ONCE IT IS IN PLACE, THE RELEASE LEVER FOR THAT IS  
22 LOCKED AND SEALED, AND THE ACCESS TO THE DOORS IS  
23 BASICALLY NOT ACCESSIBLE. ALSO IN HERE IS IF SOMEBODY  
24 -- THEIR KID IS HOLDING THEIR CARD FOR THEM AND THEY  
25 SMEAR GRAPE JELLY ON IT AND GOES IN AND IT SMEARS ACROSS

1 SOMETHING, A TECHNICIAN OR A PROPERLY TRAINED PERSON --  
2 AND IT DOESN'T LIKE THAT I AM IN HERE. IT'S GIVING ME  
3 AN ERROR THAT SAYS I AM NOT GOING TO LET YOU DO ANYTHING  
4 BECAUSE THE PAPER PATH IS OPEN, BUT I CAN COME IN HERE.  
5 I CAN WIPE THIS DOWN. IF THIS GETS DIRTY, I CAN CLEAN  
6 THAT.

7 AND THEN IN THE BACK IS THE PRINTHEAD AND  
8 THE SCANNER. SO -- AND WE CAN TALK ABOUT THAT IN  
9 CONJUNCTION WITH SOME OF THE THREAT QUESTIONS. SO THOSE  
10 CAN BE EASILY CLEANED, BUT THEN WHEN THEY ARE SNAPPED  
11 SHUT, THE MACHINE, THE PAPER PATH DOES A QUICK SELF  
12 CHECK THAT SAYS OKAY, YOU SNAPPED ME SHUT, I AM GOING TO  
13 RUN A LITTLE SEQUENCE TO MAKE SURE I AM HAPPY AGAIN.  
14 AND I AM OFF AND RUNNING. I WILL LOCK THIS. AND IF MY  
15 PROCEDURES SAY, I WILL SEAL IT BACK AS WELL.

16 SO THAT IS THE BASIC OPERATION OF THE  
17 MACHINE.

18 THE COURT: COULD YOU SPOIL A BALLOT?

19 THE WITNESS: I COULD.

20 MR. WIYGUL: MR. BAUMERT, DO YOU WANT TO  
21 DEMONSTRATE THE LIGHT FUNCTION? MAYBE WE CAN PUT THAT  
22 IN THE VIEW OF MORE PEOPLE.

23 THE WITNESS: OKAY. AND I AM GOING TO GO  
24 THROUGH THIS VERY QUICKLY. BUT I WILL DESCRIBE WHAT I  
25 AM DOING. THE LIGHT COMES ON AND SO START VOTING.

1 VOTE. LET'S GO DOWN HERE AND HIT PRINT. YES, I WANT TO  
2 PRINT. SO THERE I CAN LOOK AND SEE THAT NO SELECTION --  
3 I WANTED TO VOTE FOR MY BUDDY AS THE AUDITOR. SO I AM  
4 GOING TO HIT SPOIL. AND IT'S GOING TO ASK ME, ARE YOU  
5 SURE? AND I CAN EITHER RETURN BACK TO THE PROCESS AND  
6 CONTINUE ON OR I CAN TRULY SPOIL IT. AND RIGHT NOW, THE  
7 VOTER IS NOT GOING TO KNOW ANYTHING OTHER THAN THEY HAVE  
8 TO GO GET A POLL WORKER TO HELP THEM. THE POLL WORKER  
9 WOULD COME IN AND SILENCE THE ALARM. THEY ARE GOING TO  
10 SAY YES, THAT'S WHAT I WANT TO DO. THEY ARE GOING TO  
11 CONTINUE. THEY ARE GOING TO HAVE THE POLL WORKER STEP  
12 ASIDE -- THE VOTER STEP ASIDE AND THEY ARE GOING TO  
13 ENTER A PASS CODE. AND THE BALLOT IS VISIBLE, BUT THE  
14 VOTER HAS INDICATED THAT THEY DON'T WANT -- THAT'S NOT  
15 HOW THEY WANTED TO VOTE. SO I DON'T KNOW HOW THEY WANT  
16 TO VOTE. I CAN LOG A REASON WHY. SO IF IT'S A VOTER  
17 REQUEST OR IF A VOTER JUST WALKED AWAY AND THE MACHINE  
18 WAS SITTING THERE IDLE FOR LONG ENOUGH, IT WILL MAKE YOU  
19 FOLLOW THIS PROCEDURE. AND AT THIS POINT THE VOTER --  
20 THEY HAVE A CHOICE. IT SAID SPOIL, BUT THIS CARD IS NOT  
21 REALLY SPOILED UNTIL THE POLL WORKERS DO THE PROCEDURE  
22 FOR SPOILING THIS BALLOT. SO IT WOULD BE SIMILAR TO  
23 WHERE IF I FILLED IN OVALS ON AN OVAL-FILLED BALLOT AND  
24 WALKED OVER TO THE LITTLE BALLOT SCANNER AND IT SAID YOU  
25 HAVE OVERVOTED THIS CONTEST, AND IT KICKS IT BACK TO ME.

1 AND I CHOOSE TO HAVE IT KICKED BACK TO ME. I CAN LOOK  
2 AT THAT AND GO, SCREW IT AND JUST PUT IT IN AND CAST THE  
3 BALLOT.

4 SO RIGHT NOW, I CAN PUT THIS CARD BACK IN  
5 AND I CAN SCAN IT AND CAST IT, OR I CAN HAND IT TO THE  
6 POLL WORKER AND THEY CAN FOLLOW THEIR PROCEDURE FOR  
7 SPOILING THE BALLOT, AND WE PROBABLY RECOMMEND THAT THEY  
8 COLOR THROUGH ONE OF THE BARCODES JUST TO MAKE SURE.

9 THE COURT: RECAST IT IF YOU WOULD.

10 THE WITNESS: I CAN, YES.

11 SO AGAIN, EVERY TIME I INSERT A CARD,  
12 IT'S GOING TO SCAN TO SEE WHAT IS ON THE CARD. IN THIS  
13 CASE IT SAW A MASTER BARCODE SO IT KNOWS IT HAS BEEN  
14 VOTED AND HERE IS THE SUMMARY OF WHAT I VOTED.

15 MR. WIYGUL: AT THIS POINT, CAN YOU  
16 CHANGE THOSE SELECTIONS?

17 THE WITNESS: YOU CANNOT. THERE IS A  
18 SUMMARY SCREEN YOU CAN TURN ON. THERE IS ONE AVAILABLE  
19 FOR THE ADA VOTERS WHERE BEFORE THEY HAVE PRINTED, THEY  
20 CAN TOUCH THIS AND IT CAN GO BACK TO THAT PARTICULAR  
21 CONTEST AND CHANGE A VOTE. BUT NOW THE ONLY WAY TO  
22 CHANGE IT AGAIN IS TO EJECT IT AND HAVE THE SPOIL  
23 PROCEDURE FOLLOWED. SO THE REASON IT WAS DONE THIS WAY  
24 IS BECAUSE A LOT OF JURISDICTIONS REALLY LIKE THE CHAIN  
25 OF CUSTODY PROTECTIONS FOR THE PIECE OF PAPER.

1 THE COURT: SO IF I HIT PRINT BALLOT, IT  
2 WILL SIMPLY GO INTO THE BIN?

3 THE WITNESS: YES. AND IT IS CAST.

4 THE COURT: OKAY.

5 THE WITNESS: AND THE WAY THE LOGIC OF  
6 THE MACHINE WORKS, ANY TIME THE CARD COMES OUT THE  
7 FRONT, THE VOTE DATA IS DESTROYED, IS ERASED IN THE  
8 WORKING MEMORY. ANY TIME IT GOES IN THE BACK, OUT THE  
9 BACK, THAT IS, YOU KNOW -- AND WE CAN GO THROUGH EXACTLY  
10 THE PROCESS FOR HOW THE BALLOT IS SCANNED AND HOW IT'S  
11 -- THE DATA IS USED AND HOW IT IS STORED. BUT THE DATA  
12 HAS TO BE STORED TO PERMANENT MEMORY BEFORE THE CARD IS  
13 EJECTED. OTHERWISE, YOU RUN THE RISK OF EJECTING THE  
14 CARD INTO THE BIN, SO IT'S AN UNCOUNTED CARD INTO A  
15 BALLOT -- BIN OF COUNTED CARDS AND THEN FOR SOME REASON  
16 THE MACHINE MALFUNCTIONS AND YOU CAN'T STORE IT. SO YOU  
17 NEVER, EVER WANT THAT TO HAPPEN. YOU NEED THE DATA  
18 COMMITTED PROPERLY AND YOU KNOW IT'S COMMITTED. THEN  
19 YOU JUST PHYSICALLY EJECT THE CARD.

20 MR. WIYGUL: MR. BAUMERT, CAN YOU SHOW  
21 THE COURT THE SPECIFIC LOCATION OF THE PRINTER AND  
22 SCANNER.

23 THE WITNESS: I COULD, YES.

24 SO AS WE SHOWED HERE, I AM GOING TO OPEN  
25 THIS BACK UP AGAIN AND SO A SECOND RELEASE. SO THE



1 PRINTER -- AND SO, YOUR HONOR, IF YOU WANT TO LOOK  
2 INSIDE THERE THE TAN STRIP HERE IS THE PRINTER. AND THE  
3 LITTLE GLASS HERE IS WHAT IS A CONTACT IMAGE SENSOR. IT  
4 IS A SCANHEAD THAT REQUIRES ITS OWN SCANNER. THERMAL  
5 PRINTER. AND SO AS IT IS PRINTED -- AS IT IS PRINTED IS  
6 IMMEDIATELY SCANNED. AND THE REASON WE DO THAT IS  
7 BECAUSE -- AND WHEN WE GO THROUGH THE WHOLE PROCEDURE,  
8 WE CHECK TO MAKE SURE THAT WHAT THE VOTER ENTERED IS  
9 WHAT WE READ BACK FROM THE CARD. AND IF WE DON'T, WE  
10 EJECT THE CARD AND WE DRAW AN ERROR. AND IT'S VERY EASY  
11 TO DEMONSTRATE. YOU PUT A PIECE OF SCOTCH TAPE OVER IT  
12 SO IT CAN'T PRINT THE BARCODE. SO IF THEY CANNOT READ  
13 THE BARCODES RELIABLY, THEY ARE NOT FULLY TO BE READ AND  
14 THEY DON'T MATCH OR THEY'RE INVALID, OUR SCANNING WOULD  
15 SEE THAT AND WOULD END THE VOTE SESSION BECAUSE IT KNOWS  
16 THAT IT CAN'T TABULATE IT PROPERLY. SIMILAR TO WHERE IF  
17 YOU TOOK THE CARD AND YOU SCRATCHED IT OUT, AND TRIED TO  
18 STICK IT INTO ONE OF OUR PRECINCT SCANNERS OR A STANDARD  
19 BALLOT YOU HAVE COLORED THROUGH THE CODE CHANNEL, IT'S  
20 GOING TO KICK IT OUT, AND SAY, I CAN'T READ IT, GO GET A  
21 POLL WORKER. SO THAT ALLOWS US TO DO WHAT WE CALL A  
22 PRINT VALIDATION, MAKE SURE THAT IT PRINTED -- THE  
23 BARCODES PRINTED WITH THE DATA THAT MATCHES WHAT THE  
24 VOTER ENTERED. SO --

25 MR. WIYGUL: THAT IS ALL I HAVE IN TERMS

1 OF THE MACHINE. I DON'T KNOW IF YOUR HONOR HAS  
2 QUESTIONS.

3 THE COURT: IS THIS YOUR WITNESS OR  
4 YOURS? NO, NO. THIS WILL BE YOUR WITNESS?

5 MR. LIEB: I AM EXAMINING, YES, FOR THE  
6 PLAINTIFFS.

7 THE COURT: I DON'T WANT TO STEAL YOUR  
8 OWN THUNDER ON CROSS. IS THERE ANYTHING OF A MORE  
9 BENIGN NATURE YOU WANT TO ASK.

10 MR. LIEB: JUST FOR PURPOSES AT LEAST FOR  
11 THE MOMENT FOR DEMONSTRATION, THERE HAS BEEN DISCUSSION  
12 OF THE PRINthead LIFTING.

13 THE WITNESS: YES.

14 MR. LIEB: IS IT POSSIBLE TO SHOW US  
15 MECHANICALLY WHAT IS MEANT BY THE PRINthead LIFTED?

16 THE WITNESS: I DON'T KNOW IF IT IS  
17 BECAUSE YOU HAVE TO KIND OF LOOK AT THE SIDE. SO THAT  
18 WOULD PROBABLY BE SOMETHING YOU HAVE TO DO VIA DRAWINGS,  
19 VIA TECHNICAL DRAWINGS OF THE MACHINE.

20 THE COURT: IT WON'T LIFT WITH THE DOORS  
21 OPEN?

22 THE WITNESS: IT WILL NOT OPERATE WITH  
23 THE DOORS OPEN BECAUSE THAT'S A SECURITY FEATURE.

24 THE COURT: ALL RIGHT.

25 MR. LIEB: I THINK IT WAS INDICATED

1 YESTERDAY IN THE TESTIMONY THAT SOMEHOW PENNSYLVANIA WAS  
2 ABLE TO DETERMINE THAT IT WAS LIFTING. I WAS NOT AT  
3 THAT EXAMINATION, SO I DON'T KNOW HOW THEY DID THAT.

4 THE COURT: THIS HEARING IS NOT GOING TO  
5 END TODAY AND IF YOUR EMPLOYER HAS A VIDEO OF THAT, IF  
6 YOU COULD PROVIDE IT -- IF COUNSEL COULD PROVIDE IT TO  
7 COUNSEL FOR BOTH SIDES HERE, I ASSUME THAT'S BETTER THAN  
8 NOTHING, IF THERE IS A VIDEO.

9 MR. LIEB: YES, YOUR HONOR.

10 MR. WIYGUL: THE VIDEO SHOWS THE  
11 PRINthead MECHANISM.

12 THE COURT: I ASSUME. IT WOULD HAVE TO  
13 BE SPECIALLY ARRANGED SO THAT THERE IS A CAMERA THERE.  
14 IF YOU DON'T HAVE IT, THAT'S OKAY. I AM NOT REQUESTING  
15 TO YOU CREATE EVIDENCE.

16 THE WITNESS: I AM NOT A LAWYER. BUT  
17 THESE THERMAL PRINTERS, THEY ARE REALLY MEANT FOR  
18 ROLL-FED STOCK. SO LIKE THIS THERMAL PRINTER, LIKE THE  
19 CASH REGISTER RECEIPT, THEY ARE REALLY MEANT TO ALWAYS  
20 HAVE PAPER IN THEM. SO FEEDING -- AS WE LEARNED WHEN WE  
21 DEVELOPED THE EXPRESSVOTE, FEEDING CARD STOCK IN AND OUT  
22 OF A PRINTER WHERE THE HEAD IS DOWN ON THE ROLLER THAT  
23 PUSHES THE PAPER UP AGAINST THE PRINthead IS VERY  
24 DIFFICULT. SO -- AND IF YOU DO IT AT TOO HIGH A SPEED,  
25 IT JAMS. IF YOU DON'T INTRODUCE IT AT THE RIGHT TIME,

1 IT JAMS. AND SO REALLY IT TURNED OUT TO BE SOMEWHAT OF  
2 A SECURITY FEATURE. BUT LIFTING THE PRINthead WAS A  
3 PRACTICAL MATTER, BECAUSE PASSING PAPER IN AND OUT OF A  
4 PRINthead LIKE THAT IN BOTH DIRECTIONS WITH NO CATCH  
5 POINTS AND TIMING EVERYTHING PERFECTLY IS HARD.

6 AND SO WE JUST -- THE PEOPLE WHO DESIGNED  
7 THIS JUST SAID, LIFT THE HEAD OUT OF THE WAY AND SHOOT  
8 THE PAPER THROUGH AT HIGH SPEED SO THAT -- AND THE ONLY  
9 TIME -- SO THE PAPER COMES IN, THE PRINthead LANDS DOWN  
10 ON THE PAPER, AND THEN IT PRINTS. AND THERE ARE SENSORS  
11 THAT INDICATE WHETHER THE PRINthead IS DOWN, AND SO THIS  
12 THING IS KIND OF A SELF-CONTAINED LITTLE  
13 PRINTER/SCANNER, AND WE ARE JUST SENDING, JUST HAVE A  
14 LIBRARY THAT SENDS VERY SIMPLE COMMANDS TO IT THAT SAYS  
15 PRINT, EJECT, THAT KIND OF THING. THIS PART OF IT HAS  
16 NO ELECTION KNOWLEDGE. IT PRINTS WHAT WE WANT AND  
17 EJECTS THE WAY WE WANT IT TO GO.

18 THE COURT: ANYTHING ELSE FOR NOW, MR.  
19 LIEB?

20 MR. LIEB: IS IT POSSIBLE TO REOPEN THE  
21 PRINthead COMPARTMENT?

22 THE WITNESS: YES, ABSOLUTELY.

23 MR. LIEB: BASED ON YOUR VISUAL OPERATION  
24 AND KNOWLEDGE OF THE DESIGN OF THE SYSTEM, IS IT FAIR TO  
25 SAY THAT THE SCANNER AND PRINthead ARE ABOUT AN INCH